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ABSTRACT

This guide provides information to persons interested in establishing a work-at-home program, specifically those in clerical or support staff positions who use modern automated office equipment. The text is divided into two sections. The Home Worker section provides a summary of the At Home in the Office Project, personality characteristics believed to be related to successful home work programs, characteristics of work that seem to be suited for working at home, and laws and agencies that affect the home worker. The Online Lines section supplies information to help home workers select appropriate hardware and software for the basic work station and optional equipment to add to the basic design. Other topics include defining a work space, selecting appropriate furnishings, arranging the home work station, and telecommuting and its suitability for home workers. Five exercises are provided to help home workers evaluate the home work option more precisely. They cover assessing the suitability of one's personality and job to home work; assessing software needs; comparing hardware, software, and vendors; evaluating available software packages; and designing a home work space. Two other exercises help to figure the start-up costs and to ascertain the feasibility of telecommuting. A simulation of a typical home worker's day follows. A glossary, entitled "New Language for the Office," is attached. (YLB)

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AT HOME IN THE OFFICE

A Guide for the Home Worker

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AT HOME IN THE OFFICE

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College of Education

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AT HOME IN THE OFFICE

A Guide for the Home Worker

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FOREWORD

The Office for Research in High Technology Education at The University of Tennessee, Knoxville, is conducting a program of work on high technology and its implications for education. Funded by the U.S. Department of Education's Office of Vocational and Adult Education, the program addresses the skill requirements and social implications of a technology-oriented society. Issues concerning computer literacy and computer applications are a focus of the program. The balance between the liberal arts and technological skills and the complementary roles they play in enabling people to function in and derive satisfaction from today's high-technology era are also addressed. The program's efforts are targeted at secondary schools, two-year post-secondary institutions, community colleges, universities, industrial training personnel, and other education and training groups.

The program consists of three major components:

COMTASK Database. COMTASK is a model of a computerized task inventory for high-technology occupations. The outcomes of the COMTASK system include a sampling of task analyses, the demonstration of how these task analyses can be rapidly updated, a manual for conducting task analyses to provide data for the system, and a guide to using the system.

State-of-the-Art Papers. A series of nine papers is being developed to address high technology and economic issues that are of major concern to education.

At Home In the Office Study. At Home In the Office is an experiment that has placed office workers and telecommuting equipment in the workers' homes to study the effects moving work to people rather than people to work. The implications for educators, employers, and employees will be significant, as work at home offers a possible avenue of employment for people living in rural areas, parents of pre-school children, handicapped individuals, and others.

ABSTRACT

This guide is designed to provide information to persons interested in establishing a home work program. The primary focus of this document is for people in clerical or support staff positions whose skills place them in a position to negotiate with one or more employers and who wish to work at home as an alternate work site. The text is divided into two sections--The Home Worker, and Online Lines. The Home Worker section provides a summary of the At Home in the Office Project conducted at The University of Tennessee, some personality characteristics believed to be related to successful home work programs, some characteristics of work that seem to be suited for working at home, and laws and agencies that affect the home worker.

The second section of the text--Online Lines--supplies information to help home workers select the appropriate hardware and software needed for the basic work station and optional equipment to add to the basic design. Also included is a chapter on defining a work space for the home office, selecting the appropriate furnishings, and arranging the home-work station. Another chapter explores telecommuting and its suitability for home workers. Also included are some guidelines for work at home. To help develop a better understanding of high-technology vocabulary, a glossary of terms used in the modern office has been included.

Five exercises have been developed to enable home workers evaluate the home work option more precisely. One such exercise helps to determine if the home worker's personality and current job are suitable for home work. Another set of exercises is devoted to (a) assessing software needs, (b) evaluating available software packages, and (c) comparing hardware, software, and vendors. Also presented is a sixth exercise to figure the cost of starting up an office in the home. The seventh exercise has been designed to help ascertain if telecommuting is an economically feasible option.

Of special interest will be the simulation of a typical home worker's day. Situations are presented which offer two alternatives. You must decide which of the choices that you, as a home worker, will follow. Subsequently, based upon your decision, different scenarios will occur.

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I. INTRODUCTION

The advancements in telecommunications have enabled Toffler's prediction of the Electronic Cottage to become a viable option for some individuals. However, very little has been published to help people set up a work-at-home situation.

Working at home is not a new trend. Professionals in programming, research, architecture, word processing, and management, to name but a few career areas, have found working at home a preferred way to earn an income. In the past decade advances in telecommunications and computers have combined to make working at home a more attractive choice for both workers and employers. Employers are discovering that some of today's employees are placing increasing value on the quality of life and are looking for ways to overcome (a) the loss of time necessary to commute to and from work, (b) the cost of clothes required for work, and (c) the time spent away from their families because of work. In response, businesses wanting to attract and retain professional workers have increased both the number of home workers and the scope of the home work performed.

The description of home workers varies in individual and organizational characteristics. There is the individual employed full-time by a single organization via formal contract, receiving the same support and benefits as any other employee but working at home, an alternative work site. Or there are the self-employed contractors who use the home as their primary work site, provide for their own support and benefits, and contract their services to multiple employers. Other categories of home workers are distinguished by the following factors: (a) the amount of support provided by the home worker vs. support provided by an organization, (b) the number of employers to which the employee is contracted, and (c) time spent with the home as primary work site.

A concept used to help distinguish between full-time home worker employed by one company and a contract worker employed on a contract basis is the idea of workplace augmentation vs. workplace substitution (Olson & Tasley, 1983). Organizationally linked home work is used to augment the existing organizational workplace as an alternative to the conventional office (Olson & Tasley, 1983). Self-employed home workers use the home as a substitute work site to replace the conventional workplace.

The information in the following text, exercises, and simulation is based on (a) a review of current literature on the home work phenomenon, and (b) research conducted at The University of Tennessee, Knoxville. A review of recent articles about the potential of working at home provides interesting speculation but little factual information. There are many popular articles describing anecdotal home work incidents but few published research studies that have investigated the relationship between individual characteristics and the success of working at home. Some proponents of the home work concept suggest that, within the next 15 years, 10 to 15 million people will be working at home (Grieves, 1984). These proponents say that people working at home will be more satisfied, more productive, and have greater flexibility to schedule their lives. Opponents of home work claim that home work programs represent a return to turn-of-the-century sweatshops. Some opponents state that employers will use home work programs as a method to circumvent minimum-wage and child-labor laws, to reduce benefits, and to pass on costs to the home worker that traditionally have been absorbed by the employer.

Home work is not for everyone. This guide should enable you to make an informed decision about your prospects for a successful work-at-home program.

II. THE HOME WORKER

A REVIEW OF THE AT HOME IN THE OFFICE RESEARCH PROJECT

The concept of home work is not new. Historically, the Industrial Revolution (1700s) marks the beginning of a shift from home-based businesses to centralized work sites. The shift from home-based businesses to centralized work sites was spurred on by improvements in automation and the development of modern assembly line techniques. However, this trend may begin to reverse itself in the near future. John Naisbitt (in *Megatrends*, 1982) says that the United States is gradually changing from a production oriented society to an information oriented society. Naisbitt states that workers in the United States producing, manipulating, and transmitting information are the largest segment of the workforce.

Workers engaged in information occupations already make up over 60 percent of the labor force (Naisbitt, 1982). The U.S. Bureau of Labor Statistics predicts that the demand for workers with information processing abilities will continue to increase for the next decade at a rate of 10 to 12 percent a year (Naisbitt, 1982).

Modern information processing equipment can allow some workers, such as word processors, computer programmers, and others whose jobs involve the creation, manipulation, or transmission of information to move from a centralized office to a home-based work station (Nilles, 1976). By combining modern telecommunications facilities such as telephones, teletypewriters, radio, television, or satellite transmission devices with modern information processing devices such as word processing equipment or computers it is now possible for an individual to communicate with a centralized office from a remote work site. The use of telecommunications equipment and computer systems as a substitute for commuting to work is known as telecommuting (Nilles, 1976). Some experts predict that as many as 7.5 million workers currently have the potential to telecommute (Grieves, 1984).

Although the concept of working at home and telecommuting to a central office has been written about extensively in the popular press, little research has actually been conducted to determine the impact of home-based work on workers, their managers, and their co-workers. In light of the potential number of workers and employers who might consider telecommuting as an option and the lack of research conducted in this area, a program of research was instituted at The University of Tennessee, Knoxville. Sponsored by the U.S. Department of Education, Office for Vocational and Adult Education, this program examined aspects of home work. Some factors of home work investigated by these researchers included: (a) how work performed in the traditional, centralized office changes with the introduction of a home work program; (b) how individual job satisfaction is affected by working at home; and (c) what the effects of a home work program are on home workers, managers, and co-workers.

The eighteen month research project conducted at The University of Tennessee was entitled At Home in the Office (AHIO) and is described in this chapter. Descriptions of the people who participated in the study and the types of work that were examined are included. Also included in this chapter are some of the preliminary findings of the study. Finally, some of our conclusions and observations about the home work project are offered.

Information about the home work program was collected by a variety of methods including interviewing the participants, their managers, and their co-workers; having the home workers complete and maintain daily work logs; and obtaining samples of their work. These data were obtained over a 12 month period out of which the participants were to spend nine months using their homes as remote office sites. The program was designed to collect information before the participants began working at home, during the nine months that they were working at home, and (in a follow-up period) after participants returned to the office.

Home workers and their managers were interviewed at the beginning of the project to assess duties and tasks of workers. Based upon the initial assessment of office needs, a specific work station was configured and installed for each home worker. Although a duplicate work station in the home is not considered to be necessary for all home workers to telecommute, for the purposes of this study duplicate work stations were installed within the office from which the worker had come.

Types of Work

The jobs performed by the participants differed along certain characteristics. All jobs were selected on the basis of: (a) equipment considerations; (b) the amount of interaction necessary between the participant and other individuals in the course of work; (c) the amount of uninterrupted time necessary to complete the task; and (d) the amount of structure built into the job.

Equipment. All jobs were chosen because of their current use of modern automatic office equipment such as word processing equipment or facsimile transmission devices. Four types of work stations were established. The basic work station consisted of a dedicated word processor with telecommunications capability, a letter quality printer, and a modem to communicate between the home and office work stations. The first home office work station configuration consisted of the basic work station. The second configuration began with the basic work station and added a facsimile device to transmit printed or graphic material between work stations. The third configuration included both the basic work station and facsimile, and added an extension phone connected directly to the centralized office. The fourth work station configuration consisted of the basic work station, facsimile, office extension phone, and dictation equipment for the transcription of dictated material by the home worker at the home work station.

Interaction. The amount of interaction between the worker and other individuals is important in the selection of a job to be conducted at home. If the job requires the worker to interact frequently with other people, then the job may not be appropriate for a home work program. Olson (1982) states that jobs requiring little or no interaction with others are best suited for home work programs. The amount of work-related interaction between a participant and others was established by the number of hours a participant was required to be present in the central office per week. Supervisors determined tha amount of time that workers spent in the office. Each office had differnt requirements ranging from no time (0 hours), 1 full day (8 hours), 3 half days (12 hours), to 2 full days (16 hours) in the office.

Uninterrupted time. Jobs that required periods of uninterrupted time to complete their tasks were selected as better suited for the home work project. This job characteristic was chosen as appropriate for the jobs to be conducted at home so as to take advantage of the potential that home work has for establishing periods of uninterrupted time. The participants initially estimated the amount of time necessary to complete their specific job if they were able to proceed uninterrupted. These estimates ranged from less than an hour for some tasks to two full days (16 hours) for other tasks.

Task structure. The task structure of the jobs was considered to be an important factor in the selection of jobs to participate in the work-at-home program. Since the structure of the job was expected to differ in the home work environment compared to the office work environment, the task structure of the jobs selected represented a range of task structures. For the purposes of this study, task structure was determined by four characteristics: feedback (to the worker from the task); task complexity; job clarity; and goals (to be met).

Each participant was asked to evaluate the amount of feedback they received about the quality of their work. One worker said that she received little feedback from her job. The other three workers said that they received a large amount of feedback.

Task complexity refers to the variety of skills that the workers believed to be necessary to accomplish their jobs. These values ranged from very low to high task complexity.

Job clarity refers to the way that the participants felt when asked if they knew what was required of them to adequately complete their work. The workers responses ranged from low job clarity to high job clarity.

All participants were asked if they had clear goals or well established deadline requirements in order to successfully complete their work. All had clearly defined goals to meet, but the time required to meet those deadlines ranged from less than an hour for some tasks to three weeks for other tasks. Overall, the participant's task structure ranged from very low to high. Table 1 describes the four home work stations and task characteristics.

TABLE 1

HOME WORK STATIONS AND TASK CHARACTERISTICS

Site	Equipment	Time in Office	Time per Task	Task Structure
1	Basic Work station*	2 days each week	1-16 hours	High
2	Basic Work station Facsimile	0 days	1-16 hours	Moderate
3	Basic Work station Facsimile Extension phone	3 1/2 days	4-16 hours	Very Low
4	Basic Work station Facsimile Extension phone Dictation	1 day	1-4 hours	Low

*Basic workstation consists of word processor with telecommunications capability, letter quality printer, and modem.

In addition to identifying the task structure characteristics of feedback, complexity, clarity, and goals, each worker was asked to complete a detailed task analysis describing the task performed by the worker and the amount of time necessary to complete the task. Figure 1 shows a sample list of tasks that might be performed by a worker.

Each worker completed a task analysis for their particular job. The initial task analysis was used to establish the precise tasks that were performed by the worker in the central office. Five months into the remote work program a second task analysis was completed by each worker while working at home in order to compare work in the central office with work conducted at home.

FIGURE I
SAMPLE JOB ANALYSIS FORM

How Much Time Do You Spend Performing These Tasks?

0 - Not Performed
1 - Very Little
2 - Limited Amount
3 - Moderate Amount
4 - Considerable Amount
5 - Great Amount

WORD PROCESSING

These tasks involve what you do to make the word processing equipment work--the selecting and pushing of buttons to make the machine operate. They do not include the typing portion of the work nor the editing, proofing, and so forth.

	Task	Time spent doing task
A1	Turn on or turn off equipment	
A2	Select program (Word processing, graphics, printing, communications, utilities/backup, etc.)	
A3	Select tasks (text, files, communications, etc.)	
A4	Request tasks (create, use, display, etc.)	
A5	Select and enter input command (Just the commands--not the typing)	

Managers

The managers of each office were interviewed to determine why they decided to begin a home work program, what their expectations were regarding the program, and why they selected the person chosen to participate. Generally, the managers were enthusiastic about the potential of a home work program. Managers felt that such a home work program could provide their workers with the opportunity to complete their jobs in less time than it would normally take to complete in the office. They felt that working at home would result in a reduction in the number of interruptions that occurred in the office. Equally important was the fact that all managers viewed the opportunity to work at home as a non-traditional benefit that could be given to an employee. Thus, the home work program was seen as a reward to the worker, with the possibility of improving employee performance simultaneously. Managers stated that the home workers were chosen because they were excellent employees and, in the managers' opinion, could work very well without constant supervision. At least one of the managers felt that working at home was a way to retain the services of a very good employee who otherwise might have left the department.

Workers

One participant was chosen from each of four departments at The University of Tennessee. The participants were all female, ranging in age from 20 to 35, married, and with dependent children. All of the home workers were classified as support staff by the University. All of the participants had expressed an interest in working at home as a way of combining career and family needs.

An initial interview was conducted with each home worker to ascertain their reasons for wanting to work at home and their expectations for the home work program. Although each worker had unique reasons for wanting to work at home, they also had some common bonds. All wished to spend a greater amount of time with their children. One participant said that it would be the last year for her child to be at home before beginning school and she wanted to spend that time with the child. A commonly cited reason for working at home was the high cost of child care services. All participants indicated that a portion of their earnings went toward child care costs; they anticipated that working at home would be an option that could reduce some of their expenses. All said that they felt that their job could be completed more efficiently and with greater speed if they had fewer interruptions during the day.

When asked about expectations for the home work program one participant replied that she expected to be happier at home than in the office. She said that she believed working at home would relieve some anxieties and frustrations that had built up in the office. All workers said that they expected to be able to work as well or better at home when compared to the office. They all said that they did not expect their family life to interfere with their job performance, and that they did not expect their relationships with their supervisors and co-workers to change.

Job Satisfaction

A job satisfaction questionnaire, the Job Description Index (Locke, et.al., 1969), was administered to the participants one month before they began working at home for two reasons: (1) to assess each person's satisfaction with their job while in the office; and (2) to establish a base level of satisfaction, to be compared against later measures of satisfaction. The Job Description Index (JDI) identifies five factors that contribute to job satisfaction—work, supervision, people, pay, and promotion. The results of the initial job satisfaction measures are reported in Table 2. (To protect the identities of the home workers, the reporting of their job satisfaction responses in Table 2 does not correspond to the work sites listed in Table 1.)

TABLE 2
INITIAL JOB SATISFACTION RESPONSES

	Satisfaction With				
Participant	Work	Supervision	People	Pay	Promotion
1	Moderate	High	High	Moderate	Low
2	Moderate	High	Moderate	Low	Low
3	Low	High	Very Low	Low	Very Low
4	High	High	High	High	High

All of the participants reported they were satisfied with the supervision that they received from their respective managers. However, responses varied from very low to high for the four other categories. Overall, one worker said that she was not satisfied with her current job; another worker was very satisfied with her job. The other two workers said that they were generally satisfied with their jobs, but that there were aspects of their work with which they were not satisfied (e.g., promotion opportunities).

Once the participants began working at home, the managers and workers were interviewed on a monthly basis. After the home work program had been in operation for five months, an interview was conducted with co-workers of the home workers. The purpose of these interviews was to solicit the observations of individuals not formally part of the home work program but nonetheless affected by it.

Changes in Work-Related Activities

The first two months that the work-at-home program was in operation was a period of adjustment for both the home worker and the central office. Some aspects of the remote work program that necessitated adjustments by the central office and home worker were: (1) establishing the work stations, (2) work pickup and delivery, and (3) redefinition of tasks and responsibilities.

Work stations. Initial adjustments had to be made by both the central offices and the home workers in establishing their respective work stations. The central offices were able to establish work stations with relative ease. The office space that had been occupied by the home worker could be converted into a new work station. The home worker had to either create a new work station or convert existing home space into a remote work station. Each home worker established a permanent work station, but its location in the home varied according to the needs and desires of the home worker. Some workers set up their work stations as separate offices away from the rest of the house; other workers incorporated their work stations into the flow of household activities. In the first home work situation, the workers were able to separate themselves from the household environment when it was "time to go to work," thereby creating a division between home and work roles. In the second work-at-home environment, the workers merged their work roles within their home roles. This allowed them the opportunity to complete their job-related tasks while also engaging household-related tasks (e.g., childcare).

Work transmission. Since the types of work performed by the home workers differed between departments, each office and home worker pair made different arrangements about the transmission and delivery of work. For the workers who were required to be in the office sometime during the week, the pick up and delivery of work was simplified. Generally, they would pick up or deliver material only on the days that they were to be in the central office. For the one person who was to stay at home all week, a courier system was devised to transmit work between the central office and her home work station. That is, her husband would stop off on his way home from his job to pick up or deliver material. These work transmission procedures evolved during the first two months of operation in response to the different demands placed on the offices and home workers.

Redefinition of work. When each department initially considered establishing a work-at-home program, certain jobs were selected as more appropriate for home work than others. No job consisted of a single task to be completed by the workers, but instead, each job contained multiple tasks for which the workers were responsible. In addition, while the workers were in the central office they would assist co-workers on an informal basis by temporarily assuming duties and responsibilities not listed in their formal job descriptions. With the introduction of a home work program, changes occurred in the types of tasks that the home workers completed. These task changes resulted in the redefinition of the job responsibilities for the workers, their managers, and co-workers.

For example, a problem that quickly arose for one department concerned the answering of the telephone. Although not part of the home worker's job description, the office found that the worker had spent considerable time in answering the telephone. When she began working at home, the office had to assign a different person the responsibility of answering the telephone. Reducing the amount of time that the home worker spent on the phone increased the amount of time she was able to concentrate on her formal duties but resulted in a change of duties for a co-worker. The home worker felt that she was able to do her job more efficiently. The co-worker felt that she was being asked to assume the home worker's job and, when interviewed, said that she was unhappy with the situation.

All of the departments involved with the AHIO study reported changes in the duties and responsibilities of the home workers and their co-workers during the first two months of the study. Overall, the net result of redefinition of duties and responsibilities was a clarification of what work was to be completed by the home workers and what work was to be performed by their co-workers.

In general, the nature of the work to be completed by the home workers was changed to reduce the amount of interaction between the home workers and others, increase the amount of uninterrupted time that could be spent on a task, and increase the amount of structure for the job. Co-workers of the home workers were formally assigned or informally assumed some of the previous duties and responsibilities of the home worker.

Once the initial adjustment period had ended, each office and home worker had an established, standardized work routine that they usually would follow. The offices had established procedures for the transmission and reception of work acceptable to both the office managers and the home workers. The home workers had determined when they would usually begin and end their work day and when they would actually be processing their day's work. For example, one home worker stated that she would begin her work day at 8:00 a.m. and might not finish until 9:00 or 10 p.m. that night. However, during the day she would work for a few hours in the morning, take a break, perform some household tasks, run errands, spend time with her family and friends, and after dinner she would complete her job-related duties while watching television with her husband. So that although her "official" work day went from 8:00 a.m. to 10 p.m., the actual amount of time spent on job-related tasks was less than her traditional eight hour day.

The majority of home workers participating in this program were able to complete their work in less time than expected. One person said she was able to complete in two hours at home the same amount of work that would have taken all day in the office. The workers attributed their productivity to three factors: reduced interruptions, fewer distractions, and greater ease in the start up of work. While at home,they experienced longer periods of time without interruptions. Thus, they were better able to complete a task in one sitting rather than to be interrupted and have to resume the task later. They also reported there were fewer distractions working at home than there were in the central office.

Interruptions and distractions can be distinguished from each other by the amount of choice that a person has in responding. Interruptions are caused by an external agent (e.g., the phone ringing, or a child crying) and a worker must respond immediately to the cause of the interruptions. Distractions (e.g., a piece of cake in the refrigerator) are more voluntary in nature. That is, a worker may put off or refuse to succumb to the distraction, but must react quickly to an interruption.

One distraction often mentioned by the participants as present in the central office was the desire to converse with co-workers about nonwork-related topics. The home workers reported that when working at home, the amount of social interaction between themselves and their co-workers was reduced and the nature of the interaction was changed. The home workers said that they talked with their co-workers for short periods of time, less frequently, and usually about work-related issues when working at home. When the workers were in the central office, they would be more likely to talk with their co-workers for long periods of time, more frequently, and about nonwork-related issues.

The third factor that the participants said helped increase their productivity was the reduced amount of time necessary to begin working. The workers stated that they were able to begin a task as soon as they desired and they did not have to depend upon other individuals in order to accomplish their tasks. They reported that they knew what needed to be accomplished and when the task needed to be completed. They said that their work was usually waiting for them at the start of their day and that the time normally spent waiting for work was reduced or eliminated.

Changes in Job Satisfaction

While the work-at-home program was in operation, satisfaction measures were solicited from the home workers, managers, and co-workers. The JDI (Locke, et. al., 1969) was administered to the home workers twice while the work-at-home program was in progress at different times to determine if the home worker's satisfaction with the five factors measured by the JDI (i.e., Work, Supervision, People, Pay, and Promotion) changed while they were participating in the home work program. The managers were interviewed on a monthly basis and asked to evaluate the performance of the home workers and the effects of the work-at-home program on the employees who remained in the office, and to provide an overall evaluation of the program. The managers were also asked during each interview session if they would continue the home work program after the nine month study period had ended. The co-workers were interviewed once to determine their overall satisfaction with the home work program and their evaluation of the future success within their department.

The home workers. When interviewed, the participants of the work-at-home study said that overall they were very satisfied with the home work program. They stated that working at home allowed them the freedom to be with their family while maintaining a career. However, some of the workers had complaints about some aspects of the home work program. One worker felt that she was doing far more at home than she would do if she were in the central office. She viewed the fact that she was more efficient at home as a possible detriment. She felt that her co-workers were transferring their tasks to her as a way of reducing their work load. Despite feeling that she was working harder than she would in the central office, she still felt that she was better off working at home because of the opportunity to schedule her own time.

Another worker had the opposite problem. She stated that she had large periods of time with no work to complete. She said that she would have preferred to be busier during the day. She added that, as long as she did not have any work to finish, she would prefer being at home to being in the central office.

An inspection of the home workers' responses on the JDI revealed that four out of the five factors tested remained constant during the study period. The only factor that appeared to change was the home workers' reported satisfaction with promotion. Each of the home workers reported a decrease in their satisfaction with promotion opportunities. That is, they felt less satisfied with their chances for promotion at the end of the study period than they did at the beginning of the study (See Table 3).

TABLE 3
FINAL JOB SATISFACTION RESPONSES

	Satisfaction With				
Participant	Work	Supervision	People	Pay	Promotion
1	Moderate	High	High	Moderate	Very Low
2	Moderate	High	Moderate	Low	Very Low
3	Low	High	Very Low	Low	Very Low
4	High	High	High	High	Low

Although, initially, three of the four workers reported low satisfaction with promotion, all four workers were less satisfied at the end of the study period than they were in the beginning. When asked about their decreased satisfaction with promotion opportunities, most of the home workers' replies expressed the idea that their current jobs had limited potential for advancement. They stated that they desired better jobs not currently available to them. From the home workers' responses to further questioning, it became apparent that during the work-at-home experience, there were increased future job expectation. When home workers compared the promotion opportunities available to them with their increased job expectations, they became less satisfied with promotion opportunities than before the study began.

The managers. The managers began the study with an approach that might be described as guarded optimism. Managers were aware of the potential that the work-at-home program had for improving productivity and increasing employee satisfaction. One manager's primary reason for establishing a work-at-home program was to retain the services of a valued worker who might have otherwise left the department. The managers were also aware of potential problems that could arise during the course of the home work program. One manager said that other members of the department who utilized the home worker's services might not support the home work program. Another manager was concerned about the effects of providing a particular worker with the chance to work at home while other workers remained in the central office. This manager felt that the co-workers might object to the work-at-home program or to the worker who was allowed to work at home.

The results of the monthly interviews with the managers showed a continuous decrease in support for the work-at-home program. The managers gradually lost whatever enthusiasm that they had for the program and at the end of the study period would not recommend for the continuation of the project. The causes of the decline in support for the work-at-home program fell into three categories: equipment problems, work load, and lack of support by significant others.

Equipment. Some of the offices reported problems with their equipment. Specifically, the facsimile and dictation equipment failed to meet the needs of the offices. It was not that the equipment was faulty or defective but that the office did not feel that the equipment was suitable to meet the work demands of the office. Problems with this equipment negatively affected some managers' perceptions of the home work program. The cost of the equipment was a major concern of the managers. If an office wished to continue the work-at-home program after the study period then the office would have been required to purchase this or similar equipment. Cost of the equipment influenced the managers' decisions not to continue the program once the nine month study period had ended.

Work load. Some of the offices began to experience difficulty in maintaining a constant work load for the home worker. Only in one office was there a steady work load for the home worker. In two of the other three offices the work load varied such that at times the office had very little work to be completed. This meant that not only was there little work to be completed in the central office but also that the home worker had no work to complete at home. One manager commented that she felt that if they were paying someone to do nothing at home, then at least the home worker could come into the office and help out on whatever work they did have to complete.

This problem may have occurred due to the use of a public university as the test site for the work-at-home study. The home workers were dependent on university faculty members to generate work for them to receive, process, and return. The work to be generated by the faculty and to be processed by the home workers in two departments was primarily large documents such as manuscripts or grant proposals. The work-at-home program had been established with the expectation that there would be sufficient work generated by the faculty to keep the home workers busy all day. In two University departments the production of manuscripts and grant proposals failed to reach the levels necessary to maintain a constant work flow to the home worker. This problem became especially acute during the summer when many faculty members were on vacation.

Lack of support. The third contributing cause to decreasing support for the home work program was the lack of support by some significant others in the office. The term "significant others" is used to describe those individuals able to influence perceptions of the home work program either by their actions or by their comments, primarily office co-workers and faculty members whose jobs are affected by the home work program.

Some of the co-workers interviewed expressed dissatisfaction with the home work program. They felt that they were being required to do more work since the introduction of the home work program; they also reported that they felt the home worker was doing less at home than they were required to do in the office. The result of this perceived inequity was a general lack of support for the program by some of the co-workers.

Some faculty members expressed their concerns about the home work program and its effect on their work. The scheduling of work to be transmitted to the home worker, processed, and then returned to the central office created some changes in the way in which faculty was required to submit their work to be processed. Traditionally, work could be submitted at any time during the work day with the expectations that it would be completed shortly. The design of the remote work programs created a change in the traditional system of work management. The change involved the types of work to be performed by the home workers. Only certain types of documents were processed by the home workers while at home. These were usually larger documents with a correspondingly longer turnaround time. Short, quick turnaround, documents (e.g., letters) would be either processed by an office worker or be transmitted by facsimile to the home worker to be completed at home. This change affected the way in which some faculty members scheduled their own work. Some faculty members expressed dissatisfaction with their inability to give work immediately to the home worker. Instead, some felt that the turnaround time for documents was greater since the home work program began. The faculty's perceptions influenced support for the home work program and lead some faculty members to recommend against the continuation of the project beyond the nine month study period.

The three factors of equipment problems, work load, and lack of support are all seen as contributing to the decisions not to continue the home work program after the research study ended. One factor when considered independently did not appear to be sufficient to cause the managers' decisions to discontinue the program. When the three factors were considered together, however, the managers felt that their decision should be to have the home worker return to the central office.

Although all offices experienced the same types of problems, the solutions to those problems were not always the same. Instead, in some offices the problems were analyzed and corrected as quickly as possible. For example, when the home worker was not in the central office, then a co-worker would be required to record messages meant for the participant. One co-worker stated that, traditionally, if a telephone call was received, then the call would be transferred to the person directly. With the introduction of the home work program, any telephone calls were recorded by someone in the office; the home worker would collect her messages at a later time. This procedure delayed the response by the home worker to the caller and increased the amount of work to be done by co-workers in the central office. One result of this procedure was that callers were becoming impatient and dissatisfied with the home worker because of the increased response time. Another product of this procedure was the alienation of co-workers who felt that they were assuming the home worker's responsibilities. A resolution of this problem was achieved by installing an office extension telephone was installed in the home office work station. The installation of the extension telephone eliminated both the delay in response time by the home worker and the expressed dissatisfaction by the co-workers. With the extension telephone in the home work station, any telephone calls to the worker were easily transferred from the central office to the home work station and could be immediately received by the home worker; thus, reducing the response time to the caller and the additional responsibility of recording messages by the co-worker.

One side effect of installing the extension telephone was that a caller would be unaware of the fact that the worker was not physically present in the central office. Instead, the caller assumed that the worker was in the central office and did not perceive any changes in the traditional office structure. If informed of the home work program, a caller would express not only surprise but also support for the program because of the ease of communication. This support for the work-at-home project by significant others who interacted with the home worker was in contrast to the dissatisfaction expressed for the other home work programs. One explanation for the difference in support lies in the ease of communication between the home worker and these significant others.

Observations and Conclusions

Some characteristics of this study make it impossible to generalize to all work-at-home programs. The university environment differs in many respects from the business world. The limited number of participants can not be considered as representative of all workers that might be chosen to begin work-at-home programs. And, finally, the job classification of support staff was not representative of the range of information processing occupations that may be appropriate for home work. Thus, the following observations may be limited in their applicability to other home work programs.

One factor consistent throughout all of the work-at-home programs was the desire of the managers to reward qualified employees in a non-traditional fashion and to retain their services. Olson (1983) has indicated that the main reason for an organization to begin a work-at-home program is to retain qualified personnel. She says that this is only true, though, if a person has skills that provide the power to bargain for the home work program. Each person selected to participate in the home work project was chosen for two reasons. First they were viewed as valuable employees and second the managers felt that allowing these employees to work at home would act as a reward and encourage them to stay with the department. All of the participants recognized that their opportunities for advancement within their department were limited and had indicated that they were unsure as to the length of time they would remain in their current jobs. All of the participants agreed that they would stay with their department for at least the duration of the study. At the conclusion of the study, one worker began another job. Of the other three workers, as of this writing all have returned to their previous jobs. Thus, the strategy by the managers to retain the workers appears to have been at least partially successful. All of the workers have indicated that they would want to continue working at home and would do so again if the opportunity were available.

All of the departments experienced some difficulty introducing the work-at-home program into the office. How the initial difficulties were resolved appears to have contributed to the decision to continue or discontinue the program at the end of the study period. With the aid of the results of this study, three possible sources of difficulty can be identified: task identification, role clarification, and procedural changes. Some suggestions may be offered on how to deal with these problem areas in the future. One source of difficulty came from the description of tasks to be performed by the home worker. An extensive task analysis should be conducted by an organization before initiating a remote work program. Once completed, the manager and worker should decide which tasks would be appropriate for home work and which tasks could only be accomplished in the central office. From the revised task listing a new job description may be written for the home worker. This initial task identification process could reduce or eliminate the task redefinition period that occurs after the work-at-home program has begun.

Once the task identification process is completed, then the second source of difficulty—role clarification may be addressed. The home worker's job will in all probability change to accommodate working at home; so will the duties and responsibilities of the manager and co-workers. In an attempt to minimize the disruption of work that might occur, the manager should meet with all significant others to clarify any changes that might occur in their job roles. There may be a number of changes in particular job descriptions as some duties and responsibilities are transferred among the workers (both home and office). Preliminary discussion and anticipation of the changes may reduce the negative impact on the overall perception of the work-at-home program and improve the support by significant others for the program.

The third source of potential difficulty may occur due to the introduction of changes in the standard operating procedures of the organization. If tasks are redefined and job roles are changed, then it is possible that there will be procedural changes that affect the home worker and significant others. In the present study, one procedural change concerned the transmission of work to the home work station and the back to the office work station. This procedural change was anticipated before beginning the work-at-home program, and procedures were established to accommodate the situation. A potential procedural change not anticipated but successfully handled was the example given earlier about the transmission of messages to the home worker. The use of an office extension telephone installed in the home work station eliminated the necessity to institute any procedural changes and was well received by all of the parties involved. A change that was not successfully dealt with involved scheduling of work by some significant others to be completed by the home worker. When these significant others failed to supply the home worker with a constant work load, the home work program was perceived as not working properly. A possible procedural change that might have been established before the work-at-home program began could have structured the flow of work to the home worker so as to provide a consistent level of work. This might have involved changes in the way in which the work was delivered by the significant others who were responsible for work generation.

As a final observation, some mention should be made about the job performance by the home workers. This topic has been purposely left for last. There are two reasons for leaving the discussion about job performance until this point. First, actual job performance appears to have less impact on the decision to continue the work-at-home program than did the other causes already cited. Second, the home workers work performance is generally considered to be as good or better at home than at the office. The home workers uniformly stated that they were able to also felt that the quality of their work had improved because they had more time to check their own work while still completing the task in a shorter period of time. The managers also reported the quality of work to be as good as that performed in the central office (although one manager felt that the quality of work for one home worker was declining near the end of the study period). Therefore, it appears that the increased efficiency of the home workers was less important in the overall decision to continue the program than were the factors of equipment problems, insufficient work load, and lack of support by significant others.

In the last interview conducted with the managers and home workers they were asked if they would consider working at home as an option in the future. All of the managers stated that they felt that they had learned a great deal about the realities of home work and would be willing to consider a work-at-home program in the future. They said that although they were not continuing the work-at-home program at present, they would be able to use the information that they gained in the implementation of a future program. The home workers were unanimous in their support for the concept of working at home. They stated that if given the opportunity to continue working at home they would begin immediately and continue indefinitely.

The following chapters of the Guide for Home Workers are based in part on expertise gained by the authors in conducting the At Home in the Office research study and partly on the work done by other people investigating the home work phenomenon. The guide is designed to assist you in determining if working at home would be an option that you might consider.

The next chapter discusses the motivation for home work for both the individual and the organization. In addition, the exercise to be completed for the next chapter will supply you with a self-assessment questionnaire that will help you determine if the role of a home worker is advisable for you.

WORK AT HOME: AN OPTION FOR ORGANIZATIONS AND PEOPLE

In the Third Wave Alvin Toffler described a future when people would work at home connected to the office by inexpensive information processors. As more and more people consider using their home as a workplace, they are asking questions about whether working at home is an option for them. Not everyone can work at home. Some organizations do not consider working at home as a possibility for their employees. Companies involved in work-at-home programs realize that certain tasks are more easily adapted to the home work environment than are others. Even the organizations that would consider implementing a home work program recognize that not all employees have the temperament or the skills necessary to successfully work at home. This chapter explores some of the reasons why companies and people consider working at home as an option.

Organizational Motivation

One reason organizations begin work-at-home projects is to retain qualified personnel whose particular job skills place them in demand (Olson, 1983). Work-at-home programs provide an opportunity to continue to work for an organization when employment otherwise might discontinue. This is usually true only for home workers with special skills and abilities who are able to negotiate with the organization and develop an alternative employment relationship. Another reason for organizations to begin a work-at-home program may be economic. Some organizations (e.g., Blue Cross/Blue Shield of South Carolina) have reported individual productivity gains between 20 percent to 70 percent for work-at-home programs (Geisler, 1983). Overhead costs can be reduced with a reduction in the number of employees on the premises. Since office rental costs are usually based upon the amount of space (number of square feet in the office), reducing the amount of office space may consequently reduce rental costs. Fewer employees in the office also means reduced energy costs.

Reducing the cost of fringe benefits due to changes in the compensation system is another employer incentive. It is estimated that in some cases fringe benefits add between 30 percent to 50 percent to the total cost of an employee (Henderson, 1982). Some organizations have reduced costs by contracting for specific services or paying employees on a piece rate basis.

Many organizations are seeking to increase employee satisfaction by improving their "quality of work life." While the relationship between job satisfaction and job performance is complex, satisfied employees are likely to be of greater value to the organization than are dissatisfied employees. Satisfied employees generally show less tardiness, absenteeism, and turnover (job changing) than do dissatisfied employees. Satisfied employees are less likely to file grievances or commit acts of sabotage (either covert or overt) against the organization (Lawler, 1971). Improvements in the quality of work life may occur through a variety of options. Changes in the physical work environment, a restructuring of work flow, increased flexibility, and so forth may improve the employee perception of the quality of the organization. For organizations, working at home is an option for flexibility in management.

Individual Motivation

One reason for you as an employee to select working at home as an option is increased flexibility in scheduling work to accommodate other demands on your time (e.g., child care). Working at home may provide greater freedom of action than exists in the centralized office. With proper scheduling, you can attend to other tasks while still fulfilling job obligations. Greater control over the task as well as greater responsibility for the finished product is another important motivating factor.

Working at home may be an option for you as a possible way to reduce costs. In addition, you may find that after you begin working at home, it is as if you had received an increase in pay. One individual reported saving as much as $400 per month in child care services. Other individuals have reported savings in transportation. Handicapped and elderly individuals with limited mobility and related transportation problems may find working at home a possibility. American Express is one organization that has a work-at-home program designed for the elderly and handicapped (Raney, 1983).

If you have continual access to information processing equipment, then it is possible that the equipment may be used for nonwork-related activities. Depending on the type of equipment available to you, nonwork activities may include personal correspondence, educational endeavors, or even game playing.

With the increased flexibility of working at home, some individuals may be able to take on additional jobs. Working at home full time for two or more organizations is known as "sunlighting" (Weinberg, 1984). You may find that working at home will increase your productivity so that you are able to accomplish two or more jobs in the same time period once allocated to a single job. Generally, employer reaction to sunlighting has been negative. Some employers perceive sunlighting as a sign that employees are somehow shirking their responsibilities to the parent company.

Working at home may give you the opportunity to provide supervision and care for your children. As the number of dual-career couples and single-parent families within the workforce increases, so does the number of children requiring child care services. The lack of adequate and safe child care services in the United States is an increasing concern among working parents. Some parents believe that working at home is their only solution to providing child care services and earning an income simultaneously. However, for some individuals, working at home may be an extreme and far from ideal solution to the problem of working and providing child care at the same time (Olson, 1983).

Working at home can provide you the opportunity for long periods of time free of interruptions. Working at home may be selected as an option on the basis of personal preference. You may prefer the autonomy and freedom from supervision that working at home may provide when compared to the traditional centralized office. You may seek out a familiar and comfortable environment by working at home. One individual remarked: "If I don't have at least three hours of time that I know will be uninterrupted, then I won't even start a project."

Geographical preference may be another reason for working at home (Olson, 1983). You may prefer certain parts of the country and may be unwilling to relocate. By using telecommuting equipment, it is possible for the organization to retain the services of a highly trained employee while satisfying your geographical preferences.

Psychological Issues for the Individual

You might look at home work as a method of increasing job satisfaction. There are a number of dimensions to job satisfaction such as Autonomy, Responsibility, Skill Variety, Task Identity, and Task Significance (Hackman & Oldham, 1976). You may begin a work-at-home program in an effort to reduce the amount of stress that you experience in the traditional workplace. Will home work result in greater job satisfaction, and the reduction of job stress, or will working at home create role conflicts that produce other stresses? These issues and others are presented in this chapter.

Individual satisfaction. Working at home has the potential to improve your personal job satisfaction. Hackman and Oldham (1976) have identified five core job dimensions that contribute to job satisfaction, stating that, for certain individuals, jobs with low levels of these five dimensions are less satisfying than jobs with high levels of these characteristics. Hackman and Oldham identify Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback as five core factors that contribute to job satisfaction. The five core job dimensions are described as:

- Skill Variety, the degree to which the tasks require different skills

- Task Identity, the degree to which the individual completed a "whole" and identifiable piece of work

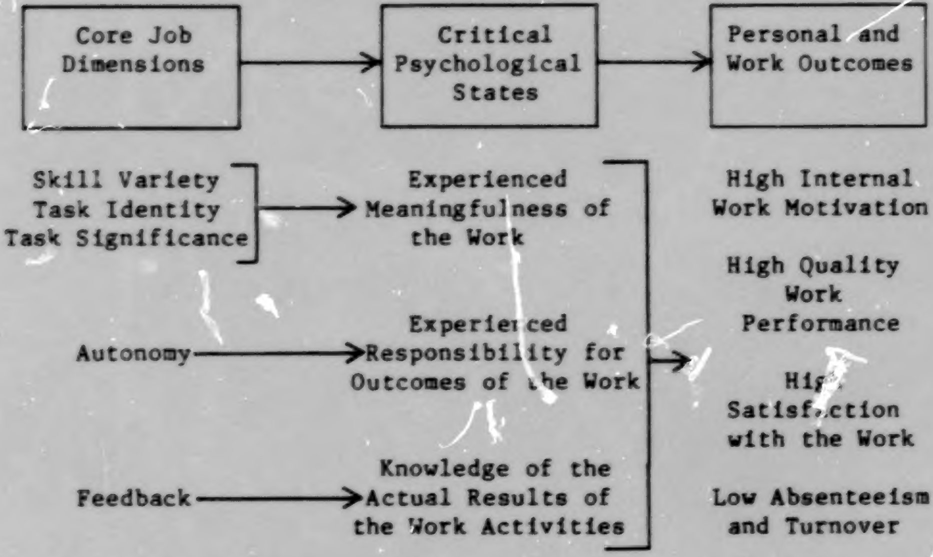
- Task Significance, the degree to which the job has an impact on the lives or work of other people

- Autonomy, freedom and independence of action

- Feedback, the degree to which the job provides clear and direct information about individual effectiveness

Their theory suggests that Skill Variety, Task Identity, and Task Significance combine to contribute to your "experienced meaningfulness of work," Autonomy contributes to your "experienced responsibility for work outcomes," and Feedback contributes to your "knowledge of actual results." Hackman and Oldham (1976) state that for certain individuals who have particular psychological characteristics jobs high in all five core job will result in (1) high internal work motivation; (2) high quality work performance; (3) high satisfaction with work; and (4) low absenteeism and turnover (see Figure 2).

FIGURE 2
JOB CHARACTERISTICS MODEL OF WORK MOTIVATION


Core Job Dimensions
Critical Psychological States
Personal and Work Outcomes
Skill Variety
Task Identity
Task Significance
Experienced Meaningfulness of the Work
Autonomy
Experienced Responsibility for Outcomes of the Work
Feedback
Knowledge of the Actual Results of the Work Activities
High Internal Work Motivation
High Quality Work Performance
High Satisfaction with the Work
Low Absenteeism and Turnover

(Source: Hackman & Oldham, 1976)

For an individual engaged in home work, the possibility exists of a job high in all five core job dimensions. For many jobs, working at home could be especially high in autonomy when compared to the traditional work setting. It is possible that you will have greater independence in the home work environment when compared with your previous work in a centralized workplace, resulting in a greater sense of autonomy.

For a work-at-home project to be most effective, the task should have well defined objectives and well established time deadlines (Olson, 1982; 1983). Research on goal setting has shown that well defined objectives with clearly stated deadlines result in greater employee satisfaction when the employee perceives the goals and deadlines as reasonable and attainable. Within the home work environment, you may have greater control over the pace of work compared to the traditional office. You may be better able to estimate and attain task goals.

Stress reduction. A number of factors contribute to job stress: the nature of the work, environmental factors, and personality conflicts. You may be motivated to work at home in an effort to reduce the amount of stress experienced in the workplace. It is possible to reduce stress by restructuring the nature of the work. For some individuals, the pace of work may produce stress. Working at home is an option that allows the worker to determine to some extent the pace of work.

One type of stress that you might find in the workplace involves the work environment. The work environment consists of many factors, such as temperature, lighting and sound. These factors are not normally under your control in the centralized office. Working at home allows you to determine and control to some extent a variety of enviromental factors. One home worker said: "I am allergic to cigarette smoke. I worked in a large office and some of my co-workers smoked. Until I moved my work home, I had to suffer. Now, I don't have to worry about it."

Sometimes stress is a result of personality conflicts. Some individuals may choose to work at home in order to avoid co-workers. However, the social isolation of working at home may have its drawbacks. Although working at home may allow you to avoid co-workers, it also limits the interchange of ideas and information between employees. If you require a constant flow of information to perform your job effectively, working at home is probably not a desirable option.

You may find an extensive commute to be a stressful experience. Anyone who has experienced driving in bumper-to-bumper rush hour traffic or spent a considerable portion of their day traveling to and from their workplace can understand how working at home could reduce commute stress. In some of the major cities of the United States an hour or more travel time to and from work is accepted as part of the job. Working at home can eliminate the need to physically commute to work. Instead, you can telecommute. By telecommuting, you may find that the reduction in travel time frees you for other activites and reduces the stress that you feel from commuting.

Role conflict. Working at home does present the possibility of role conflict for you. Working at home does not provide clear distinctions between the home and the workplace. It is no longer possible to escape from work to the home or vice versa. Additionally, it becomes difficult to separate the roles of worker, spouse, and parent once home life and the workplace become fused. Role conflict can lead to dissatisfaction and stress, conditions that working at home was to alleviate.

Economic Issues to the Individual

Working at home has definite costs and benefits for you. You will find it necessary to evaluate your possible savings and losses depending on your particular work situation. Transportation costs, child care costs, housing costs, and opportunity costs are discussed below.

Transportation costs. Telecommuting represents a fundamental change in the way that you join the workplace. No longer are you being moved to work but instead work is being moved to you. While the concept of the centralized workplace to which you commute is the U.S. norm, as a result it has been estimated that 25 percent of all mileage traveled and 27 percent of all gasoline consumed is in commuting (Harkness, 1977). One report estimates that if 50 percent of all office workers worked in or near their homes six out of seven working days, the savings in fuel consumption from reduced commuting would be about 240,000 barrels of gasoline daily in 1985 (Harkness, 1977).

If you commute to and from work, there are more costs involved than just gasoline costs. You must take into account gasoline costs, auto depreciation, maintenance and parts, insurance, and taxes. To compute your weekly cost for commuting by car—including gasoline costs, auto depreciation, maintenance and parts cost, insurance, and taxes—multiply the number of miles traveled to and from work in a week by 25 cents (The Carpool Guide, 1984). For example, an individual who commutes 10 miles to work each way (or 20 miles per day) will commute 100 miles per week. The weekly commute cost for the individual would then be $25.00. Over the course of a year this would amount to a commuting cost of $1,300. A savings in commute costs should always be compared with the cost of telecommuting to determine if telecommuting is a reasonable alternative.

Child care costs. For some individuals, child care services may be so expensive that going to work may not be cost effective. Once adequate child care is provided, you may be earning far less than expected. One home worker reported that 40 percent of her income went toward child care before she moved her work home.

For some individuals work at home may be viewed as a compromise between adequate child care and bringing in an income. When the cost of commuting is added to the cost of providing adequate and safe child care, for some people the choice may be limited to working at home or not working at all. If work at home is viewed as a compromise and not as a choice, it is often accompanied by problems of stress, social isolation, and low satisfaction with work (Olson, 1983).

Home-related costs. Telecommuting may not reduce all costs. Introduction of telecommuting equipment into the home may increase a number of expenses. The equipment itself may require a sizable investment. Telecommuting equipment [information processor, modem, facsimile (FAX), and so forth] require electricity to operate; it is possible that your home utilities costs may increase. Work conducted at home rather than at a centralized workplace may increase heating and lighting costs for a home worker. While organizations will welcome a reduction in their energy costs, through home work you may not be willing to assume those expenses.

Your telephone bill may increase as a result of telecommuting. The telephone may be the main source of communication between a home work station and a centralized office. As the amount of communication between the office and home increases, so might the amount of time the telephone is used. If you reside within the local calling area, then telephone expenses may not increase significantly. If you must pay long distance rates, then it is likely that telephone costs will increase. In some situations, you may be required to install a business telephone line and pay correspondingly higher rates. As a home worker, you may be able to negotiate these costs with your employer or you may be required to assume the entire bill.

Changes in telephone services may not be the only transformation that occurs as a result of moving work from the office to the home. Moving work home may necessitate a restructuring of living space to accommodate the home office. (The Online Lines section will cover configuring the home office in greater detail.) It will be necessary for you to determine where to install all equipment and materials to accommodate working at home. In some instances this may require considerable redesign of your existing living and work space.

Rearrangement of existing space may not be the only adjustment necessary to accommodate working at home; depending on local zoning codes and safety standards, you may be required to change various aspects of the home to conform to code. Every locale has different zoning codes and safety standards; you should contact your local government for information about the codes and standards.

Opportunity cost. A potential cost to you might be reduced opportunities for promotion and career advancement. On the one hand, home work might result in more objective performance appraisals by reducing the subjective estimates of worker ability by supervisors; on the other hand, some workers fear that out of sight means out of mind when the time comes to evaluate and promote employees.

Fitting Jobs to People

One reason for organizations to consider the work-at-home option is that it can be used to attract and retain qualified personnel. The traditional approach by employers has been to either hire specific individuals or to train existing personnel to fill specific positions. Either way, this procedure has resulted in a program of fitting people to jobs. A home work program represents a departure from the traditional approach.

With a home work program the job can be fitted to the needs of the individual by a process known as "job redesign." Job redesign refers to any change in a specific job with the intent of increasing both the quality of the employee's work experience and on-the-job productivity. There are no simple or generally accepted criteria for a well-designed job, nor is there any single strategy acknowledged as the best way to redesign a job. However, most job redesign programs have some aspects in common. Usually job redesign will improve some or all of the five job dimensions of Skill Variety, Task Identity, Task Significance, Autonomy, and Feedback (Hackman & Oldham, 1976). Typically, changes are made that provide employees with additional responsibilities for planning, setting up, and checking their own work; for making decisions about methods and procedures; for establishing their own work pace within broad limits, and sometimes for relating directly to the client who receives the results of the work. Often, the net result of a job redesign program is that jobs that previously had been simplified and divided into many small parts are put back together again and made the responsibility of individual workers. A number of organizations have experimented with the job redesign programs to improve employee satisfaction and productivity (Steers & Porter, 1979). In general, their results indicate that when properly implemented, job redesign improves job satisfaction, reduces absenteeism and turnover, and improves product quality (Steers & Porter, 1979).

Not every individual is suited to work at home; not all jobs are suitable for home work. This chapter has presented some reasons why organizations and individuals might consider home work as an option. A primary reason for organizations to begin a program of home work is to attract and retain employees, specifically those whose particular job skills are in demand and who are able to negotiate an innovative arrangement with one or more employers. Individuals are attracted to working at home because of its opportunities for flexibility.

Exercise 1 is designed as a preliminary, self-administered questionnaire to determine if you and your job are potential candidates for working at home. It consists of the following parts: (1) Self-assessment Survey, (2) Job Description Questionnaire Part 1, (3) Job Description

Questionnaire Part 2, and (4) Home Work Potential Grid. This exercise attempts to assess personality factors believed to contribute to successful work-at-home programs. The exercise also attempts to provide some initial information about the particular job being considered for the home work program. Any information obtained from this questionnaire should be considered as preliminary data and should be supplemented by a more complete analysis conducted by you and your organization. It is recommended that a complete job analysis be conducted to determine the specific knowledge, skills, and abilities required to adequately perform the job in question. Any decision regarding your suitability for home work should be made in the context of your entire life experience and not solely on the basis of the initial assessment provided by Exercise 1.

Working at home is an option available to you. If, after careful analyses of self and job, you find that you are favorably suited for the home work environment both you and your organization should determine if working at home is a cost effective option.

LAWS AND AGENCIES AFFECTING THE HOME WORKER

If you are like other home workers, you are undoubtedly highly motivated and convinced that you will be able to manage all aspects of your work masterfully and by yourself. You also plan to run your affairs in a professional, open, and aboveboard manner. You want to treat your clients and your employer equally, conform to all legal requirements and restrictions, maintain accurate records, pay your taxes on time, and so forth. In order to do all of these things, it is important for you to be aware of the laws that will affect your work activities and of the agencies and experts who can help you.

If you are employed by one organization and receive the same support and benefits as other employees but work at home as an alternative work site, then you will probably not be affected extensively by the laws and agencies discussed in this chapter. However, individuals working at home should check on licenses and zoning regulations.

Laws and agencies affect the home worker differently. If you are a self-employed, independent contractor who uses the home as the primary office and work site, are self-supporting, pay your own benefits, and contract services to multiple employers, then the information provided in this chapter should assist you in dealing with laws and choosing helpful agencies.

If you are a self-employed independent contractor and also hire one or more employees, then you will find that the laws become far more complicated. These are discussed in this chapter in the section titled "The Law And You, The Employer."

Selecting A Business Entity

One of the first things you should do when starting your own home business is to determine the best structure for your enterprise. There are three basic forms of doing business:

- Sole Proprietorship
- Partnership
- Corporation

For our discussion, we will focus on the sole proprietorship since it is the form most chosen by the home worker.

Sole proprietorship. This is the easiest and quickest of the three legal forms of ownership to set up and is the way the majority of new businesses start. There is no cost involved in setting up, as long as you plan on doing business under your own name. If a business is conducted under any name other than the owner's real name, a business name certificate must be filed with the clerk of the county in which the business is transacted to enable creditors and others to determine the actual ownership of the business. The certificate, available at most business stationers, must be filled out in triplicate. The county clerk will file the original and certify the other two copies, if requested. Keep one copy in your files; or, depending on the type of business, you may prefer to frame and display it. Take the other copy to a bank and open a commercial checking account in your business name; the bank requires this copy by law.

Perhaps the most serious drawback to the sole proprietorship is the problem of unlimited personal liability. Legally, you and the business are one and the same; therefore, all the liabilities of the enterprise are yours. If your business fails and the business assets you are able to gather at that point are not sufficient to cover your obligations, your creditors can move in and take away your home, your automobile, your bank accounts, and any other personal assets you hold until the debts are fully satisfied. Consequently, if your personal holdings are considerable, you might be better off considering the corporate mode. Tax laws, discussed below, also affect the operation of your home business.

Tax Laws

The advantages of working at home have already been discussed in terms of time saved from commuting, child care, and so forth. But there are some other advantages to home work and these include the savings on your income tax that you may realize by having an office in your home. This discussion is not meant to substitute for the specific guidelines set forth by the Internal Revenue Service (IRS) in a comprehensive booklet for home workers entitled, "Business Use of Your Home," Publication 587. It is meant to acquaint you with some income tax information of which you may not be aware.

As stated, the IRS has specific guidelines that you must follow when considering whether you qualify to deduct expenses for the business use of your home. In the IRS Publication 587, a "use test" is given to enable you to determine whether you meet these specific requirements. If you do, then you will be able to take a deduction from your income tax for the business use of your home.

The use test states that: to take a deduction for using a part of your home in business, that part must be used "exclusively" and "regularly": (1) as the principal place of business for any trade or business in which you engage; (2) as a place to meet or deal with your patients, clients, or customers in the normal course of your trade or business; or (3) in connection with your trade or business, if you are using a separate structure that is not attached to your house or residence. If you use your home for your work as an employee, this use of your home must be for the convenience of your employer in addition to meeting Test 1, 2, or 3, above.

"Exclusive use" means that you must use a specific part of your home only for the purpose of carrying on your trade or business. If you use part of your home as your business office and also use it for personal purposes, you have not met the exclusive use test. (However, the IRS provides another section referred to as "Exceptions to Exclusive Use Test").

For example, you use a den in your home to write legal briefs, prepare tax returns, or engage in similar work. The den is also used for personal purposes. Therefore, you cannot claim a business deduction for any of the expenses for the use of your home.

"Regular use" means that you use the exclusive business part of your home on a continuing basis. The occasional or incidental business use of a part of your home does not meet the regular use test even if that part of your home is used for no other purpose.

You may have a principal place of business for each trade or business in which you engage. For example, a teacher's principal place of business for teaching is the school. If the teacher also engages in a retail sales business and uses a part of the home as the principal place of business for retail selling, expenses for this business use of the home may be deductible.

Further discussion and examples are provided in Publication 587 and should be read thoroughly to make sure you understand the use test.

If you use part of your home for your business and you meet the requirements set forth by the IRS, you must divide the expenses of operating your home between the personal use and the business use to figure your deduction.

You must be able to show:

- Which part of your home that you use for business

- That this part of your home is used exclusively and regularly as either a principal place of business or a place where you meet or deal with patients, clients, or customers in the normal course of your business, and

- Depreciation amounts and other business use expenses for keeping up your home.

Business part. To figure the part of your home used for business, divide the area used for business by the total area of your home. Area may be measured in square feet. If the rooms in your house are about the same size, you may figure this part by dividing the number of rooms used for business by the number of rooms in the home.

For example, you use for business one room in your house that measures 100 square feet. Your home measures 1000 square feet. Therefore, you are using one-tenth (100/1000), or 10 percent of the total area for business. If the rooms in your home are about the same size and you use one room for business in a five room house, you are using one-fifth, or 20 percent of the total area for business.

What to deduct. Some expenses you pay to maintain your home are directly related to its business use, others are indirectly related, and some are unrelated. You may deduct direct expenses and part of the indirect expenses, both subject to the limitations set by the IRS.

Unrelated expenses are expenses that benefit only the parts of your home that you do not use for business. These include repairs to personal areas of your home, lawn care, and landscaping. You cannot deduct unrelated expenses.

Direct expenses are expenses that benefit only the business part of your home. They include painting or repairs made to the specific area or room that is used for business. Expenses directly related to the business use of your home are fully deductible unless you use the business area to provide day-care services or use it less than exclusively to store inventory.

Indirect expenses are those expenses you have for keeping up and running your entire home. That is, they benefit both the business and personal parts of your home. Examples of indirect expenses are real estate taxes, mortgage interest, casualty losses, rent, utilities and services, insurance, repairs, and depreciation. An indirect expense must be related in some way to the part of your home used for business. The business part of these expenses is deductible. An example is given below.

Utilities and services: your electric bill is $400 for lighting, cooking, and television. Only the lighting was used for business. If $250 of your electric bill is for lighting and you use 10 percent of your home for business, then $25 is deductible as a business expense. Any expenses for utilities or services that are only related to your business, such as business long-distance telephone calls and depreciation of office furniture and equipment, are fully deductible.

Repairs. The business part of the cost of repairs—including labor, other than your own labor, and supplies--is a deductible expense. For example, a repair to your furnace benefits the entire home. If 10 percent of the area of your home is used for business, 10 percent of the cost of the furnace repair is deductible. Repairs keep your home in good working order over its useful life. Examples of common repairs are patching walls and floors, painting, wallpapering, repairing roofs and gutters, and mending leaks.

These are only a few of the deductions you can take when operating your business in your home. Greater detail and more examples are supplied in the IRS Publication 587. Nevertheless, consultation with a capable tax advisor might be considered, especially when dealing with federal tax.

Federal Tax

The major tax bite taken by Uncle Sam is in the form of income and social security taxes. The following information will help you work through the tax law maze.

Income tax. The legal form of ownership you select has a major impact on the way tax regulations apply to your new business. You will recall that, for legal purposes (which include taxation), the individual owner and the business activity are inseparable in sole proprietorships. Consequently, if you choose the sole proprietorship as the legal form of ownership, you are required to file your annual federal tax return on the familiar Form 1040 (Individual Income Tax Return). In addition, you need to complete and submit, attached to your Form 1040, a separate Schedule C (Profit or Loss from Business or Profession--Sole Proprietorship). On this schedule you must furnish details about your business activity for the year just ended. These include your sales, the cost of goods sold (and how you arrived at the figure), the resulting gross profit, your business expenses and other deductions, and explanations of such items as depreciation and your net profit. This last figure is added to other income you earned during the year and entered on your Form 1040.

As sole proprietor, you should also calculate what your expected income tax will be for the coming year. Submit Form 1040ES (Declaration of Estimated Tax for Individuals) along with your Form 1040. The IRS will provide instructions, a worksheet on which you can work out your estimated tax, and four declaration vouchers. Each of these vouchers must be mailed, in turn, before the fifteenth of April, June, September, and January. Partial payment of your estimated tax must accompany each voucher.

Social security tax. Under the Social Security Act, self-employed persons are required to pay FICA (Federal Insurance Contribution Act) taxes. These taxes need to be paid annually, but can be paid quarterly if desired, and should be included in your declaration of estimated income tax. A self-employed individual must file social security for any year in which earnings were at least $400.

Licenses. Many different types of businesses—whether small or large, at home or away from home—are subject to government regulation by licensing. A license is formal permission granted by state or local government authorities to a person, firm, or corporation to carry on some business, occupation, or activity that would otherwise be unlawful. A license usually requires a fee.

Prospective home workers should be sure to consult local, county, and state ordinances to see if their particular business is included, so that they are in full compliance with the laws. Check with your town administrator or at city hall.

Zoning

Zoning regulations have the same endearing qualities as tax regulations—what you don't know can put you out of business. Therefore, it is advisable to learn all you can about them. Zoning is a local process, so you must learn what applies in your town.

Find out if your town has zoning. Most urban and suburban areas do; many rural areas don't. Call your city or town hall and find out. If your area doesn't, relax, but keep aware of any proposal to introduce zoning. If such a proposal is made, a legal notice will appear in your local, general circulation newspaper (daily rather than weekly) stating that a public hearing will be held. Attend all hearings and make yourself heard so that you can influence the regulations dealing with home businesses. The public hearing is your chance to speak. By the time a meeting is held to vote, it is too late—in fact, usually the public is not allowed to speak.

If you are in an area with zoning, find out your local structure. Some locations will have three basic boards: planning, zoning, and appeals.

The planning board (which may be combined with the zoning board) sets the goals, develops a long-range plan for growth, and reviews land divisions and large-scale plans (industrial and commercial) to ensure conformance with the overall long-range plan of development.

The zoning board develops and enforces a set of zoning regulations written with the intent of achieving the goals of the long-range plan of development. In theory, this board has no discretionary powers: once created, a set of regulations are met or not; maneuvering is not allowed. In practice, this description of the zoning board may not be accurate.

The appeals board exists (1) to waive zoning regulations if they have created a hardship on an individual piece of property, and (2) to review a decision of the zoning enforcement officer. Some towns also cover review of the decisions of the building inspector.

Additional regulations will be of particular interest if you are a home worker who employs others to work for you. This is discussed in the next section.

The Law and You, the Employer

To date our discussion has been directed to the home worker who is self-employed. If the home worker's business should expand and develop the need for additional labor, the legal requirements increase considerably. A brief discussion of these regulations is given below.

Social security. Every individual who employs one or more persons is liable for Social Security tax and must apply for an employer's identification number on Form SS-4 available at the nearest office of the Internal Revenue Service. An employer currently (1984) pays a 6.7 percent tax on wages up to $32,400 a year for each employee, and the employee pays a similar tax on all wages up to the same amount. The employee's share is deducted from his pay check by the employer at the close of each pay period.

Federal identification number. A business must identify itself on tax forms and licenses by either a Social Security number or a federal identification number. The latter is mandatory if there are employees and is available free of charge from the IRS. After receiving a Federal Employer Identification Number, the IRS will automatically send you quarterly and year-end payroll tax returns which must be filled out and returned even if there are no employees.

Employees' withholding allowance. This is called the IRS Form W-4. Each new employee must fill out a W-4 indicating marital status and number of exemptions claimed. The W-4 is kept in the employer's files and taxes are withheld from wage payments at a prescribed rate.

Occupational Safety and Health Act (OSHA). Employers must give their employees a safe place to work, free from recognized hazards that could cause death or serious physical harm, and follow specific health and safety standards adapted by the U.S. Department of Labor. To find out the responsibilities under OSHA, contact a regional office of the Federal Occupational Safety and Health Administration, U.S. Department of Labor.

Wages and hours. Details concerning wages and hours are available from the regional office of the Division of Labor Standards, U.S. Department of Labor. They will provide information on minimum wage rates, wage payments, overtime pay rules, laws governing discrimination and minors, and record-keeping requirements.

Workmen's compensation. Most states require that every employer carry workmen's compensation insurance to provide wage, disability, and death benefits for employees injured or killed on the job. The employer must have it before an employee works for the first day.

Owners of sole proprietorships are usually not covered under the Workmen's Compensation Law. If you are not covered, you should carry your own accident and health insurance.

Unemployment insurance. Unemployment insurance is required. You will have to submit an application, a Report to Determine Liability, and receive an insurance rating. Rates vary from state to state and from occupation to occupation. Check with your State Department of Labor.

A word to the wise. At this point you begin to realize how much more difficult it is to have even one employee. It is said that hiring employees doubles your paperwork and that means more time spent working through the papers. Also, businesses with employees are more closely controlled and regulated than those without. Government laws are strict, and the IRS is inflexible when it comes to payment of payroll taxes. This is not to say that you should not hire employees. They can be essential to the growth of your business. Be aware of your responsibilities as an employer before you hire your first employee (Behr & Lazar, 1984). You may also decide to talk to or contact one or more of the specialists and agencies discussed below in setting up your home work station.

Specialists

From our discussion thus far, you are now aware of the many laws that you must understand in order to operate your home business properly. You don't have to do it all by yourself. If your situation is complex, you might consider assistance from specialists such as an accountant, a banker, an insurance agent, possibly one or two business consultants, and a lawyer. Rarely will you ever need the services of all of these specialists at any one time. In addition, you will find there are a number of agencies that can provide helpful information on starting your business, obtaining loans, and so forth. Both the specialists and agencies will be presented in this section.

Accountant. The accountant can help set up a bookkeeping system that is simple for you to follow and that an accountant can work with at audit and tax time. Accountants are listed in the phone directory's Yellow Pages, but it is better to get a reliable recommendation from your banker, attorney, or friend. Speak with several accountants, and check their experience and references before selecting one. Fees are based on hourly rates, depending on complexity and extent of service. Many Certified Public Accountants will give you an initial consultation free.

Banker. Your banker can furnish information about the kind of business you are considering and about the community where it will be located. Furthermore, a banker's financial knowledge of loans, business accounts, bank services, and credit systems will be helpful. Your banker can recommend additional professionals and institutions helpful to you and your business.

To decide on a banker, you will need to talk to a number of them, or other people you know who have set up businesses—get their recommendations on what to do and bankers who can help. Some bankers are more conservative than others; some specialize in certain types of loans and industries; and some have different concepts of loyalty to customers. Find a bank large enough to satisfy your needs but small enough to value your business.

Insurance agent. Your insurance representative will evaluate your insurance needs and set up packages to cover specific types of business. Your agent may be an independent (dealing with several insurance companies) or a direct writer (employed by one company and writing policies only for that company).

In choosing the right insurance agent for your business, talk with several to compare coverage, costs, and convenience to select a plan that suits your needs comprehensively and economically. Agents require complete information on business operations as they relate to insurance coverage and must be kept current on changes that may affect your insurance needs. Insurance representatives are listed in the local phone directory's Yellow Pages.

Consultants. Consultants are usually tapped for a variety of one-shot problems, such as making a feasibility study for a new store location or for choosing computer equipment for your business. Management and marketing consultants can help you deal with the many facets of starting a business: products, inventory, pricing, advertising, filing, and hiring. They have access to other resources and contacts that could be beneficial. Computer consultants can (1) determine if your business would profit from computerizing part or all of its operations, and (2) identify the choices of computer hardware and software.

Management and advertising consultants are listed in the local phone directory's Yellow Pages or can be referred by other business owners and colleagues. Computer consultants can be located in a similar fashion. Establish what the consultant will do and what will be required of you. Get estimates of time and charges. Consultants may charge on an hourly, daily, or weekly basis, or on a monthly retainer fee.

Lawyer. If feasible, it may be worthwhile to engage a lawyer for your business on a retainer basis. Lawyer's services are valuable from the beginning in assisting you with all legal aspects of starting a business—setting up the legal form of the business, negotiating leases and contracts, securing needed licenses and permits, and local ordinances. These areas run the gamut from the minimum wage and labor laws, through health and safety regulations, to tax responsibilities.

Lawyers can be referred by friends, other businesspeople, suppliers, consultants, trade associations, local bar associations, or through Yellow Pages listings. Fees are based on hourly rates, depending on complexity and extent of service.

Agencies, Organizations, and Associations

1. American Women's Economic Development Corporation (AWED)
60 East 42nd St.
New York, NY 10165
212/692-9100

AWED provides technical training, assistance, and counseling to women business owners and those planning to go into business. AWED is partially funded by the Small Business Administration (SBA).

2. Farmers Home Administration
U.S. Department of Agriculture
Room 4121S
12th and Independence Avenues, SW
Washington, DC 20250
202/447-4323

This is a lending agency for individuals who generally cannot get credit elsewhere.

3. Gil Gordon Associates
10 Donner Court
Monmouth Junction, NJ 08852
201/329-2266

Consultants specializing in helping employers analyze needs for the set up of home work programs.

4. National Alliance of Homebased Businesswomen (NAHB)
P.O. Box 306
Midland Park, NJ 07432
201/423-1026

NAHB is a network of women who work from home, and is dedicated to encouraging, educating and promoting all women who work, or wish to work, from their homes.

5. National Association for the Cottage Industry
P.O. Box 14460
Chicago, IL 60614
312/939-6490

The Association offers Blue Cross/Blue Shield group insurance to home workers and monitors legislation on cottage industries. This organization also holds seminars and workshops. You must include a stamped, self-addressed envelope.

6. National Economic Development Law Center
2150 Shattuck Avenue
Berkeley, CA 94705
415/548-2600

The Center will answer simple legal questions free of charge and indicate when a lawyer is necessary.

7. Service Corps of Retired Executive (SCORE)
Room 100
1441 L. Street, NW
Washington, DC 20416
202/653-6279 or refer to your local phone directory.

SCORE now has more than 7,800 counselors at work across the nation—volunteers, who are seasoned business executives, providing management assistance to small business owners. (SCORE is a service of the SBA.)

8. U.S. Consumer Information Center
Department H
Pueblo, CO 81009
303/948-3334

The Center publishes materials relating to work, setting up an office in the home, advertising, managing a small business, and so forth. Some of these publications are free, others are available for a small charge. These publications are not geared specifically for home work, but for small businesses in general. Write for a catalog of publications.

9. U.S. Department of Commerce
Office of Assistant Secretary of Commerce
Washington, DC 20230
202/377-2000

This federal office offers business development loans and loan guarantees to individuals, partners, and profit-making organizations.

10. U.S. Small Business Administration (SBA)
1441 L Street, NW
Washington, DC 20416
202/655-4000

Refer to a phone directory for the local district office.

The SBA provides free counseling and training to help individuals plan, start, or manage a business. It also helps secure loans through local banks by guaranteeing up to 90 percent of a loan to $500,000. An individual can apply for a direct loan from the SBA providing funds are available. Direct loans are limited to $150,000.

The Women's Business Ownership Office of the Small Business Administration is trying to locate women-owned businesses interested in providing a broad range of goods and services directly to the federal government and its prime contractors. If your company has the capability of performing on federal prime contracts and/or subcontracts, you can register on the Procurement Automated Source System (PASS) with over 11,000 other women business owners already profiled in the system.

11. The University of Tennessee
327 South Stadium Hall
Knoxville, TN 37996
615/974-4251

The University of Tennessee has conducted studies on telecommuting and developed publications which could serve as guides for employers and employees who are interested in home work.

Now that you have completed the first section of this guide, you have read the results of pilot programs, and have obtained some worthwhile suggestions on how to make working at home a successful venture. In addition, you have been made aware of the various laws that could affect you as a home worker and learned about some agencies that could be of assistance to you in obtaining funds and needed information. You have also had the opportunity to look closely at the advantages and disadvantages of home work and have been informed of some personality characteristics believed to be related to successful home work.

You are now ready to move on to the second section of this guide, Online Lines, where you will find helpful information to enable you to select the hardware and software you will need for your basic work station and optional equipment that you might wish to add to the basic design. Setting up your work station also entails selecting the appropriate furnishings and arranging them. Then a chapter exploring telecommuting and its suitability for you is presented. You will also find some guidelines to help you with structuring your time and your work at home.

To help you develop a better understanding of office technology vocabulary, a glossary of terms is provided on page 125.

III. ONLINE LINES

AN INTRODUCTION TO HARDWARE AND SOFTWARE THAT COULD BE USED IN HOME WORK

The development of word processing typewriters in the 1960s produced equipment that allowed an operator to edit a document by adding or deleting information and redefining margins. Early electronic word processing systems were limited in the amount of information that could be stored by the machine. Some office equipment manufacturers began selling word processing systems that offered full page displays, multiple word processing functions, and reduced the keyboarding necessary to produce final copy. Improved technology increased the amount of information that could be stored and manipulated by a word processor.

During the late 1970s and early 1980s, personal computers were introduced to the public. Personal computers were able to perform word processing functions and could be used for purposes other than word processing. Since the distinction between dedicated word processors and personal computers has become increasingly blurred over the last few years, the information provided will be appropriate for either system, unless otherwise noted. The guide will use the term "information processor" to describe systems that can function as either a word processor or personal computer. If a major discrepancy exists between a word processor and a personal computer for a component of the home work station, then that discrepancy will be discussed in greater detail. The basic work station for the home will be described in the following hardware section.

This chapter will help you choose what equipment will be most appropriate for your work. Since the cost of hardware is rapidly changing, there will not be any discussion about the current costs of equipment. When you finish reading this chapter, you may wish to complete Exercise 3, page 84. This exercise will help you ascertain the present costs of the hardware that you select as being appropriate to your needs.

Hardware

The basic home work station is composed of the following hardware components: microprocessor or central processing unit (CPU), disk drive, keyboard, screen, printer, and modem. Optional equipment such as facsimile, photocopier, and line filter are also available for the home worker.

Microprocessor. The microprocessor or central processing unit (CPU) does exactly what its name implies--it processes. The things which it processes are known as bits. Just as a food processor processes food, a microprocessor processes bits. A "bit" is a switch inside the machine which is either "on" or "off." If the switch is off, then the microprocessor reads a zero (0). When the switch is on, the microprocessor reads a one (1). A bit is always either a "0" or a "1." It requires 8 bits to represent one character, such as the letter A. The term for 8 bits is a "byte." Most CPU memory is referred to in terms of the number of bytes that it can contain. The larger the number of bytes, the greater the amount of memory within the CPU. The standard unit of measurement for CPU memory is known as a kilobyte (K). A "kilobyte" or 1K is 1,024 bytes. It takes about 2K to equal one double-spaced typewritten page.

The CPU comes with two types of memory "chips": Read Only Memory (ROM), and Random Access Memory (RAM). Within ROM are instructions or data that are permanently placed in memory by the manufacturer. ROM chips make it possible for the machine to accept instructions and data from you when the equipment is turned on. Any information or instructions stored in ROM is retained when the equipment is turned off. In contrast, RAM is not stored permanently. With RAM chips, it is possible to store and locate data while the machine is on, but once the microprocessor is turned off, the information is lost.

Disk drives. Information programs or data is fed to the CPU through the disk drive. The disk drive acts in much the same way as a cassette tape player/recorder. There are two "heads" in a player/recorder. One will "play" whatever already exists on the tape; the other head will record on the tape. In the same fashion, the disk drive has two "heads," one a "read" head, the other a "write" head. The disk drive will read from or write onto a "disk" instead of a cassette tape.

Disks. Disks are round pieces of plastic (much like phonograph records) designed to be used with the disk drive. The disk is designed to record and play back data. Disks come in two types: floppy disks and hard disks. Floppy disks come in a variety of sizes: 3-, 3.5-, 5.25-, and 8-inch. Depending on the type of machine, a floppy disk may contain from 150K (i.e., about 75 pages) to 500 K (i.e., about 250 pages).

Hard disks are able to hold more information than are floppy disks. Generally, hard disks are available in three sizes: 10, 15, or 20 megabyte disks. A "megabyte" is the equivalent of 1,000 kilobytes or about 500 double spaced pages of text. The hard disk is self-contained within the disk drive, and the entire unit will usually cost more than a disk drive that uses floppy disks.

You "load" or enter information that has been written onto a disk into the CPU via the disk drive. This has been made possible via instructions placed by the manufacturer in ROM; these instructions are known as the Disk Operating System (DOS). The information entered by you is stored in the microprocessor's RAM, enabling you to access this information.

As an example of this process, you turn on the machine, insert a word processing program into the disk drive, wait a few seconds, and the system is ready to function as a word processor. You can now remove the word processing program disk since its information is stored in RAM. You may enter text, revise text, and (if desired) print out a final copy. Or you may insert a storage disk into the disk drive and save the text for revision at a later time. By using a floppy disk, it is possible to store up to 250 pages of text per disk on some machines in this fashion.

Keyboard. The keyboard is the link between you and the central processing unit (CPU). Most keyboards contain rows of keys used to type numbers and letters. Such keyboards are known as alphanumeric keyboards. Alphabetic (alpha) and numeric keys are usually located in the same place and used for the same purpose as character and numeric keys on a typewriter. The keyboard lets you change or add to the information stored in the computer. Some keyboards are equipped with special function keys that are pre-set or programmable. These keys are designed to simplify or reduce the number of keystrokes you would use for specific common functions such as, save, update, move, and so forth.

The process of typing on a word processor or personal computer is called keyboarding. Keyboarding differs from typing in that some keystrokes may be saved by the equipment so that the information can be revised or changed if desired.

There are three types of keyboards: (1) the "membrane" keyboard, in which the keys are on a flat panel and resemble the touch-sensitive controls that you can find on a programmable microwave oven; (2) the "chicklet-style" keyboard, which resembles the type of keyboard found on most calculators; and (3) the "full-travel" keyboard, which resembles the standard electric typewriter.

Someone who must use the keyboard extensively will require a well designed keyboard. A good keyboard is solidly built, with full sized keys like those on an electric typewriter. The keys should be positioned logically and comfortably. A membrane or chicklet-style keyboard would not be appropriate for anyone performing extensive word processing duties. A full sized, well designed keyboard will cost more than the others but will be worth the added expense.

Some equipment now comes with detachable keyboards. The keyboard is usually attached to the machine by a single cord. These detachable keyboards allow you to place yourself into a more comfortable position. If you will be at the keyboard for long periods of time, then being able to sit comfortably may be a major consideration.

You should spend some time trying various keyboards to determine the best feel. The keys should not be too tight or too springy, and should have a solid feel when pressed.

Screen. The video screen on a word processor usually resembles the screen on a television set. The screen or video display terminal (VDT) is also known as the monitor. Monitors range from 5 inches in length diagonally to 19 inches. Monitors come in two versions: color or monochrome. Monochrome monitors include, for example, green (dark green background with lighter green lettering), amber (dark amber background with lighter amber, almost yellow, lettering), and white (white lettering against a basic black background). Generally, a monochrome screen will be sufficient for most needs.

Two other ways in which screens differ are in the numbers of columns and lines. Columns are simply the number of characters the screen can display on one line. Most people find that anything less than 80 columns screen is uncomfortable for word processing. Lines are just that, the lines of characters that appear on the screen. A 24-line screen can display 24 lines at a time.

Most word processors either have 13 or 26 lines per screen. That is the equivalent of a half page (13 lines) or a full page (26 lines) of double spaced text. However, some word processors only have a single line display. These allow you to enter and revise text, but only one line at a time.

Two types of screens are commonly available for use in the home, both using a different technology (Bergerud & Gonzalez, 1984). Each screen has different characteristics for resolution (clarity), size, and weight. The most common type of screen uses a cathode ray tube (CRT) and looks like a television screen. Electrons are fired toward the screen from a mechanism at the back of the tube called an electron gun. The inside of the screen is lined with chemicals which glow when struck by the electrons and form the characters and graphic images on the screen. Typically, CRTs are bulky, fragile, and seldom operate under battery power.

Liquid Crystal Displays (LCDs) are used in a variety of visual display terminals. LCDs are the type of display used in digital watches and electronic calculators. This type of display uses chemicals captured on a piece of glass to produce the displayed image. When electricity is applied to the LCD, it causes characters to appear almost black against a gray background. LCDs are popular in battery powered computers and require less power than any other type of visual display. Most LCDs display only one to eight lines at a time, and the width of the screen varies from 20 to 80 columns or characters wide.

You must choose which type of screen and what screen size is best for your work. If you will be doing extensive word processing, then a system with a "full page" display of 66 lines by 80 characters might be the best option. This is because most operators are used to dealing with full pages and usually find the editing process to be easier using a full page display. In addition, you are able to view on the screen exactly what will be printed out as a "hard copy." This helps to reduce the number of times a page must be edited and corrected.

Printers. Printers are equipment used for the output part of information processing. They convert the keystrokes stored in the computer into what is known as "hard copy" (paper). Printers vary in speed, quality, and the methods used for creating images. Printers are available that can print a character at a time, a line at a time, or a page at a time.

Most printers produce characters by striking the desired character (letters, numbers, or symbols) onto paper using an inked or carbon ribbon to transfer the image. Printers function in the same way that a typewriter does. Since the printing device and paper are constantly making contact, printers are noisy. "Acoustic shields" or soundproofing hoods are available to reduce the noise made by the printer.

The two types of printers discussed here are "letter quality" or "daisy wheel" printers (the kind necessary to produce formal letters) and "dot matrix" printers (the kind used to produce rough drafts or nonletter quality print). Like many electronic typewriters, the daisy wheel printer uses a spoked wheel with a character on the end of each spoke to print letters and numbers. The results look as good as any typewriter can produce. You can change the type by removing one daisy wheel and replacing it with another wheel. Daisy wheel printers are comparatively slow, printing from 13 characters per second to perhaps 60 characters per second. The second type of impact printer—called a dot matrix—can travel across the page at speeds greater than 200 characters per second. Instead of conventional type, a dot matrix printer uses a bundle of needles arranged so that their points form a tiny square. The needles protrude to form the pattern of a letter or number, then strike the page. In the past, dot matrix type did not look as solid as daisy wheel type. Therefore, a dot matrix printer was unacceptable for formal letters and documents. However, some of the latest dot matrix printers will produce near-letter-quality print at speeds of 100 characters per second. As one might expect, the cost of a printer increases with two factors: (1) the speed of the printer, and (2) the quality of the print. Thus, a fast letter quality printer will cost much more than a slow dot matrix printer.

Selecting a printer is a personal choice. The quality of the print and the speed of printing must be decided by you. The printer must have the same connection, or interface, as the computer. In addition, the program that you plan on using must be able to command that brand of printer or else any text will be hopelessly garbled by the time the printer gets through with it.

Modems. A modem is a device that allows your computer to communicate through the telephone with another computer. (The other computer requires a modem also.) When connected, information can flow back and forth between systems.

The process modems use to transmit information over ordinary phone lines is called "modulation." A modem takes information from the computer and changes it into a signal that can be sent over phone lines. A second modem at the other end changes the signal back into a form the receiving computer can understand. "Smart" modems are available that automatically connect to another receiver, transmit information, and disconnect the telephone when the information transmission is completed. These modems make it possible for you to send and receive information without interrupting your work.

A less expensive, more portable device that accomplishes the same purpose is called an "acoustic coupler." In an acoustic coupler device, the telephone handpiece is placed into a special cradle by the operator. Like the modem, an acoustic coupler converts computer signals into a form that can be transmitted across telephone lines and then another acoustic coupler at the other end converts the information into signals the computer understands. Although cheaper, acoustic couplers may garble information if stray noise leaks in.

The more powerful a modem or acoustic coupler is, the faster it can transmit information. A modem's transmission rate is measured in "bauds." Bauds are the number of bits that can be transmitted per second. Cheaper modems have a baud rate of 300. Faster modems, which cost more, range from 1200 baud to 9600 baud. Generally, dividing the baud rate by 10 will give a good estimate of the number of English words transmitted per minute. If you plan on transmitting and receiving information frequently over the phone, then a faster modem may be worth the extra cost.

The basic work station for home work is the same as the automated office work station. The work station consists of an information processor with word processing capabilities, terminal, keyboard, disk drive(s), and printer. The addition of a modem permits you to telecommunicate by using the telephone. If a compatible work station exists in a centralized office, then you could transmit information from your home office to the central office. You could telecommute.

Optional Equipment

In addition to the basic hardware described, you may wish to consider obtaining additonal equipment to use at your remote work station. Such equipment could include facsimile machines, photocopiers, and surge protectors.

Facsimile. It is possible to send messages between two or more information processors via a modem or an acoustic coupler as one form of "electronic mail." Another method of electronic mail uses a device known as a "facsimile" (FAX). A FAX is essentially a type of copier that electronically sends an original document from one location to another where it is reproduced as a copy or facsimile of the original document. The FAX uses a modem or acoustic coupler which converts the original document into signals that can be sent across telephone lines to another modem at the receiving end. The modem at the receiving end decodes the signal and then the FAX will reproduce a hard copy of the original document. Facsimile may be used as a high speed alternative to the mails.

The facsimile machine (also called "telecopier") will accept documents in their original form, which means that graphic material as well as printed material can be transmitted via the FAX. The FAX can transmit rough draft or handwritten copy to your home where you may enter the copy into an information processor. It is then possible for you to transmit a printed hard copy back to the original location via the FAX or transmit from your information processor to a processor located in the office where it can be printed out.

Although the quality of print produced by a facsimile is readable, it is not always high quality. Another problem with the use of facsimile devices is that they may require the presence of an operator at each transmission point. A further limitation is that many different devices are unable to communicate with each other. Despite these limitations, an individual engaged in remote work might consider a facsimile device as an alternative method of transmitting work and information.

Photocopiers. In many organizations the photocopy machine is now considered a standard piece of equipment along with the typewriter and telephone. Photocopiers can increase employee productivity and reduce costs. When properly used, the photocopier can produce multiple copies of a document in a short time, significantly reducing employee costs and freeing employees for other tasks. Photocopiers are available that will reduce or enlarge text, copy in color, and collate documents. Costs of photocopy machines have been reduced, making machines accessible to small organizations and individuals. If the space available to you is limited, small portable copiers are now available.

It is possible to produce multiple copies of documents using an information processor and a printer. Depending on the speed of the printer, the size of a document and the number of desired copies, making multiple copies could take a very long time. If you will be required to produce multiple copies of a document, then a photocopy machine might be considered as an option.

Surge protectors. Information processors are highly susceptible to changes in electrical current. If a power fluctuation should occur, then the possibility of damage to the system exists. At the very least, it is possible to lose whatever information you are currently processing. To protect the information processor against possible damage, there are two types of protection devices. The first type of surge protector is known as a "line filter." A line filter protects the system against minor fluctuations in power by moderating small changes in the electrical current. A line filter will not protect the system if the power should fail completely. The second type is a battery powered protection device that will take over the system if a power failure should occur. These battery powered devices are generally limited in the length of time that they can maintain a system, but they can provide you with enough time to save whatever information is being processed.

A surge protection device should be considered if the information processor is to be located in an area subject to frequent fluctuations in power. Some possible causes of power fluctuations are: (a) time of day, more electrical devices in use during peak hours; (b) season, greater use of air conditioners during summer and heaters during winter; and (c) location, some rural areas have more frequent power fluctuations than do urban and suburban areas.

Software

Software refers to the programs that a computer uses. An information processor has the capability to perform many different functions but it needs software to tell it exactly what to do. A word processing program will process words; a data base management program will create and maintain files; an electronic spreadsheeting program will provide the ability to sort and manipulate data or a communications program to allow the transfer of information from one system to another. You can load in different programs and get different capabilities. It is even possible to purchase integrated programs that perform several functions.

Operating system software. Operating system software ties all the hardware together so that the processor can send data properly to the printer, correctly read the keystrokes from the keyboard and send them to the monitor, and perform other functions. The operating system also lets you load "applications" software into the processor to perform more specific tasks, such as word processing.

Not all processors share the same operating system. Only programs written for a specific operating system will work on that system. When selecting an information processor, you should pay attention to the operating system used by the processor. Some equipment manufacturers use unique operating systems. You are then limited to the software offered by the specific manufacturer for that specific operating system.

While a number of operating systems are currently in use by various manufacturers, the two most common operating systems are known as CP/M (Control Program/Microcomputers) and MS/DOS (MicroSoft/Disk Operating System). The majority of available programs run on either CP/M or MS/DOS operating systems. Other manufacturers and other office systems manufacturers have their own operating systems. You should examine the availability of applications programs before selecting equipment. You should identify your application program needs first (e.g., word processing, spreadsheeting, and so forth), estimate your future needs, and then select a processor with an operating system that meets your present and future needs. This should probably be an operating system that offers a wide range of programs.

Applications software. There are many applications software programs available for information processors. Exactly which programs you will require depends on the nature of the work performed by you. The most frequently used type of software is word processing. Most word processing programs have very similar functions. Some of the more common features include: (a) the ability to search for a word or phrase and then replace with another word or phrase; (b) the ability to move a section of text from one place to another on the same page or a different page; (c) the elimination of having to carriage return at the end of a line, a process called wordwrap; and (d) the ability to combine or merge two or more files to form documents.

Another program that a home worker may need is a Data Base Management (DBM) program. If you will be required to create and maintain files, then a data base management system may be necessary. A DBM program enables you to keep a group of records together and retrieve them later according to criteria that you select. Suppose you wish to send one Christmas greeting to all clients living in California and another greeting to clients in New York. A DBM can provide listings of clients by state, one list for clients in California and one list for New York clients. In addition, a DBM could break down the lists alphabetically, by zip code, or any other criterion chosen by you.

A third program that many individuals use is known as an electronic spreadsheet program. A spreadsheet is similar to an electronic pad with rows and columns. The number of rows and columns may vary, but all spreadsheets are able to store formulas, which can be used over and over by changing the numbers used in the calculations. For example, you may prepare a monthly budget for the next twelve months on the spreadsheet. By using a spreadsheet program, it is easy to see what would happen to the budget if a factor differed from expectations. Suppose you estimate utility costs for the winter at one figure and prepare a budget using that figure as a base. With a spreadsheet program, it would be easy to change the estimate for winter's costs and to see what effect that would have on the overall budget. Some spreadsheet programs enable you to represent the data in graphic form, such as pie charts, bar charts, or line graphs. This can be useful for presentations and reports.

Currently, there are some software programs that combine word processing, data base management, and electronic spreadsheeting into one program. If you require a particular software program, then you should determine if the software is available for a specific hardware system before selecting the equipment.

Acquiring Equipment

You may either rent equipment, purchase equipment, or lease equipment. Choosing one or more of these options is determined by your specific needs.

A rental is a short-term arrangement that generally builds no equity in the system. A lease is a long-term financing plan under which the you make periodic payments to the owner; you may elect to own the system at the end of the contract period by exercising a buy-out option. Both differ from direct purchase, under which the system is yours from the start, even if you need to borrow money to pay for it (Freedman, 1983).

Determining whether to rent, lease, or buy information processing equipment is similar to deciding to rent, lease, or purchase any other equipment. One decision factor is economics: how much can you spend, and what is the worth of the equipment to you? These questions can only be answered in context with a particular set of needs and situations.

Rent option. Renting equipment presents the lowest initial expenditure. A fee is paid for the use of the equipment, and in some cases a security deposit against damage or loss of equipment is required. You may also be responsible for any damage done to the equipment above the security deposit. Sometimes you may be able to purchase insurance against damages or loss to the equipment and minimize your risk. Renting represents the lowest return on investment (ROI). Once the equipment is returned to the owner, you are left without any financial return on the money that was paid in rent. Over a period of time the money paid out as rent may represent a considerable investment by you without a noticeable return. The advantages of renting are that it does not require a sizeable down payment and usually does not require you to rent the equipment for a specified length of time. The disadvantages of renting are no return on investment and greater rental payments than with a lease or purchase.

Lease option. A lease option is similar to renting in that the initial investment is relatively small compared to the total cost of equipment. Leasing will cost more, in the long run, than buying the system outright. This is because you are buying the system and borrowing the money to do so. With a computer lease, the leasing company owns the equipment until the buyer exercises the buy-out option.

When leasing, you agree to use the equipment for a specific period of time and, in return, are guaranteed a set cost should you chose to buy during that time period. This is unlike renting in which you pay a fee for use of the equipment for a limited time period and then return the equipment. A portion of the lease payment goes toward the purchase of the equipment. For example, one leasing option is that you agree to lease equipment for two years. At the end of the two-year period you have a dollar-buy-out option. You may purchase the equipment for one dollar plus a proportion of the monies already paid toward the lease. There are a variety of lease options that you may negotiate with the leasing company. Leasing makes it possible for you to receive a better return on investment than does renting.

Purchase option. Purchasing equipment is the third option to consider when acquiring equipment. One advantage of purchasing equipment is that, as owner, you can depreciate the value of the equipment across a number of years. Generally, a computer may be depreciated over a five-year period. The IRS has set up a schedule for depreciation: 15 percent the first year, 22 percent the second year, and 21 percent in each of the following years (Freedman, 1983). As owner of the equipment, you may be able to trade in or resell the equipment at a later date. The major disadvantages of purchasing the equipment is that buying represents a commitment of your financial resources, reducing the amount of resources that could be used for other needs. You should consider your financial needs and resources carefully when choosing between renting, leasing, or purchasing equipment. Table 4 summarizes the advantages and disadvantages of each option.

TABLE 4
OPTIONS FOR ACQUIRING EQUIPMENT

	Advantages	Disadvantages
Rent		
	No initial payment	Possible security deposit
	No time commitment	No Return On Investment
	Easy to upgrade equipment	Relatively high payments
Lease		
	Relatively low payments	Usually requires some deposit
	Specified time period	Possibility of no Return On Investment
	Purchase option	
Purchase		
	Own equipment	Large commitment of resources
	Resale or trade-in value	Chance of potential inability to upgrade equipment
	Depreciate over time	

When you consider working at home as a option, there are a number of factors that must be taken into account before actually beginning a work-at-home program. You must determine the type of equipment and software that will be most appropriate for your specific needs. Three exercises have been developed to assist you in assessing the types of hardware and software that would be appropriate for your home office: Exercise 2, Software Needs Assessment; Exercise 3, Hardware, Software, and Support Considerations; and Exercise 4, Software Evaluation.

After you have identified the potential hardware and software to be included in your home work station, you should consider where the work station will be located and how much space will be needed for your home office. The size and shape of the equipment and office furnishings may determine how and where your home office could be established. The next chapter will provide you with some information and assistance in designing your home office workspace.

DEFINING WORK SPACE, CHOOSING FURNISHINGS AND ACCESSORIES, AND ARRANGING THE HOME WORK STATION

Whether you are a self-employed home worker or a home worker employed by one company, you will be interested in planning your home office. One of your first concerns will be determining the amount of space you have in your home to set up your home office, and whether this space allows you to have your home office in a separate room, as part of a room, or on a temporary basis in part of a room (portable office). Next, you will need to decide on the furnishings and accessories to include in the office. If you are self employed, you will decide what furniture and accessories you wish to purchase or lease. If you work for a private company, your employer may provide you with some of the furnishing and accessories. This chapter will help you plan your home office, decide on furnishings and accessories, and arrange the furniture and accessories in the available space. In addition, you will be provided with a discussion of environmental factors to be considered when designing your home office.

Determining Available Space for the Home Office

When working in your home, the space that you will need is determined by the amount of equipment, furniture, and accessories you need to complete your work tasks. The size and shape of the equipment and furnishings must be considered as well as the possible arrangements of these items. Experts in the field (Keeling & Kallus, 1983) recommend that you have at least 40 square feet of office space to include all the items you need to operate a word processing home office. This would be a very small office, but with proper planning, it could serve your production needs. As a home worker, you must use whatever space you have available. Once you determine the amount of space you have, you are ready to consider how you could use that space. Three possibilities are discussed below.

Separate room. The best situation is one in which you have a separate room that you can use exclusively for your home work office. The size of the room would vary from one home to another, but you should have from 40 to 80 square feet of work space (Keeling & Kallus, 1983) if possible. Naturally, the more space you have available, the more freedom you will have in arranging the necessary equipment, furniture, and accessories.

Part of an existing room. If you have a large bedroom, family room, dining room, or kitchen, you could consider setting up your home office in one of these existing rooms. To provide the privacy, you could use temporary partitions to separate the office space from the rest of the room. The partitions can be hung on posts that can be combined to form various office configurations. They can be purchased from office supplies stores or from large retail stores and come in a variety of shapes and colors. Although you will not have the privacy available in the separate room arrangement, you will be able to have a permanent arrangement of the furnishings, equipment, and accessories that is not available in the portable office.

Portable office. If you are in a situation where there is absolutely no other alternative, you might consider using a portable office to get your home office started. This is definitely not the best solution, but until better arrangements can be made, it might have to be used. However, using the kitchen or dining room until the area must be reappropriated requires that you set up and remove the equipment and supplies you use every day. It might reduce the initial expense involved in starting your home office since you would be able to use the kitchen table and chair or other furniture you have in your home instead of purchasing them.

Completing word processing assignments requires the use of some delicate equipment (word processor, facsimile, printer, and so forth) that may not respond well to being moved around. This could lead to some maintenance problems with the equipment. The portability of the equipment should be considered at the time of purchase.

Furnishings and Accessories

Ergonomics is the relationship between machine usage, efficiency, and the comfort of the person involved in the performance of work. Your work space efficiency and comfort should be a primary consideration in choosing the furnishings and accessories for your home work station.

The basic furniture will consist of a desk, work table, and chair. The desk is considered to be the central part of the work station, frequently as a place on which, or along which, a word processing machine is positioned. Also, the desk can furnish a storage space for supplies needed and information collected.

Specialized-machine desk for word processing personnel. The specialized machine desk provides such built-in features as this model that houses a compartment for filing tapes, diskettes, or paper. The home work station can be designed to use modules that provide maximum flexibility for changing surface heights, depths and equipment storage/support facilities.

Naturally, the more specialized the design of the desk, the greater it may cost. However, with the increase in home computers, more and more retail stores are carrying less expensive models of specialized desks than those found in exclusive office equipment stores. You are advised to shop carefully and compare prices.

Desks. A typical office desk is 29 inches to 30 inches in height. Ideally, the work-surface height should be adjustable over a range of about 23 inches to 31 inches. If a fixed-height surface must be used, the height of the home row of the keyboard should be about 29 1/2 inches from the floor. Adjustable-height work surfaces facilitate use also by the home worker who works in a wheelchair.

Work surfaces should be sized to permit an eye-to-screen distance of 15 inches to 20 inches. The source document should be about the same distance from the eye, and in the same focal plane as the cathode ray tube (CRT). Copyholders permit this correct distance. There should be adequate work space on each side of the terminal. For most workers, the screen should be 15 inches to 16 inches from the front of the table. Make sure ample leg space is provided (Keeling & Kallus, 1983).

Tables. Tables serve as desks or desk-substitutes, as a place for sorting when considerable flat work surface is necessary, and as a place for storage. For many office jobs the use of a table is preferred to a desk of any kind and is, in addition, more economical. Such a table with one or two small drawers will be sufficient for most purposes for the home worker. Tables come in a variety of heights and lengths, some of which are adjustable for various heights and others which are portable and may be folded and stored away when not in use. Tables may be purchased from a number of vendors, including specialized office equipment stores, large retail stores, and catalog stores.

Chairs. The total work center for the typical home office worker utilizes a desk and a chair, both of which contribute to your physical comfort. It is important that you be comfortable to prevent strained posture when sitting for hours while performing your work. A properly selected chair will contribute significantly to your productivity and well-being. The seat should be parallel to the floor and about 16 inches square. A comfortably seated home worker will have elbows at about 90° angles from the upper arms with wrists straight. The home office chair should be adjustable as to height and should swivel. The back support should be vertically and horizontally adjustable forward and back. If the back support is provided with a spring tension, the tension should be adjustable. Studies have found that proper posture while working in the home office not only reduces fatigue but also improves health by making home workers less susceptible to colds and headaches (Prince, 1980).

Most office chairs are designed to fit as closely as possible the contour of the body. One manufacturer of chairs has designed a single unit that can be shifted into any one of several hundred configurations to suit individual workers. However, such chairs are expensive. Chairs for the home office can be purchased in office furniture stores and large retail stores. Prices vary according to the style and quality of the chair.

Listed in Table 5 are the basic equipment and furniture suggested for the home office along with some standard sizes.

TABLE 5
EQUIPMENT, FURNITURE, AND ACCESSORIES NEEDED IN BASIC HOME WORK STATION

Equipment	Approximate Size (W x L x H)
1. Word Processor	24" x 24" x 17"
2. Printer	16" x 22" x 7"
3. Facsimile	15" x 10" x 4 1/2"
4. Disk Storage	12" x 8" x 6"
5. Copier	15" x 18" x 10"
6. Modem	12" x 4" x 2"
7. Telephone	12" x 8" x 5"
Furniture	
1. Desk	60" x 30" x 30"
2. Chair	15" x 15" x 36"
3. Work Table	72" x 30" x 30"
4. Book Shelf	30" x 15" x 65"
5. Filing Units Combination	18" x 30" x 48"

Environmental Factors

It is obvious that more than one arrangement of the home office work space is possible. What may be considered the best arrangement by one home worker may not be the best for you. While careful attention should be given to choosing equipment you use in your home office, planning also requires that you consider certain environmental factors such as temperature control, lighting, noise, and color. Some of the key concerns regarding these factors are discussed below.

Temperature. If your home office has a pleasant temperature, you probably won't notice it. It is only when conditions deviate from comfort limits that you notice discomfort. This feeling can range from annoyance to extreme discomfort. Overheating leads to sensations of tiredness and sleepiness which decreases performance and increases error. In contrast, overcooling produces restlessness and increases attention. Maintaining a pleasing temperature in your home office is an important factor to consider.

Another reason for concern for temperature and even humidity control is due to the fact that you are using a word processor. Different word processors or personal computers can generate heat while in operation. Extremely high temperatures can cause malfunctioning with the component parts of the word processor, and low temperatures can cause condensation on the electronic parts. For most computer systems and word processors, the ideal temperature is between 65° and 75° F (Keeling & Kallus, 1983). Too much humidity in the room can impair the operation of the disks and peripheral equipment. Too little humidity can cause electrostatic charges to build up on disks, thus causing them to generate errors. The recommended relative humidity in the home office is between 40 percent and 60 percent. Although most word processors have built-in dust filters, care should be taken to protect equipment from dust, smoke, and other particles that will affect it adversely.

Power supply. In planning the home work station for the use of word processing equipment, another important factor is the electrical installation. The wiring arrangement should be gauged to the system being installed and should follow the manufacturer's specifications. Unless careful provisions are made for the proper wiring needs, it may be necessary to undertake rewiring of the area or to make wiring changes within the equipment. Check with your word processing vendor concerning wiring before you purchase the equipment.

Lighting. Inadequate amounts of light induce eyestrain which in turn may cause such problems as muscular tension, fatigue, and irritability. Inadequate light may also cause poor workmanship, inaccurate work, and lowered production. Most utility companies will measure the amount of light in an office with a light meter and then make recommendations for any changes needed.

Lighting problems are particularly acute for the CRT/VDT station. There are several situations of concern. First, the view screen is either glass or plastic. These are reflective surfaces and are responsible for reflecting so much light that it may interfere with seeing. This sort of glare not only interferes with your productivity but also causes discomfort, eye strain, and so forth. Lighting for this area requires careful planning and layout to avoid environmental light sources that will cause reflection off the screen. This includes daylight coming in through windows, light reflected off lamps, or any reflective highly polished metallic surfaces.

By adjusting, angling, and tilting the CRT/VDT unit, you can alleviate most of the glare condition. In addition, you should avoid the use of white laminate desks and surface tops. Also of advantage are flourescent ceiling fixtures with non-glare diffusers (Kaplan, 1982).

Noise. Working at home may eliminate many of the noise factors that occur when working at a business office. Since you are alone, traffic is controlled, the noise from other machines and equipment is reduced, and the sound of others talking is not a problem. However, a certain level of sound creates a healthy background with the office environment, providing a rhythm and tempo of work into which most people fall easily (Kaplan, 1982). Soundlessness is most undesirable: a total lack of sound will have adverse effects; however too much sound disrupts concentration.

The home worker may find that having music in the home office will provide a pleasant background sound that calms the nerves, reduces fatigue due to work strain, and lessens the work monotony. It has been found that music helps to develop a more efficient climate in which concentration on working increased, errors are reduced, and workers are better able to enjoy their work setting.

One source of music for the home worker is easily found on a local FM radio station. The music should be confined to the background so as not to become a mental distraction. Nor should the music be continuous, but rather, turned on and off for brief periods, possibly totaling 1 hour to 2 1/2 hours per day. Music is especially beneficial at midmorning and just before lunch and quitting time when fatigue is most likely to be present.

Color. If you may select your own color scheme for your home office, you should be aware of some of the effective uses of color in your home office. Color sets the mood of an office. Some colors such as blue, green, or yellow-green are considered cool and have a calming effect. These colors are suggested for southern exposures. Other colors such as red and orange have a stimulating effect and may even cause headaches and tension. Light colors are needed in home offices where close work is done on white paper, while gray colors are usually not recomended as they produce a numbing or sleep-producing effect. Similar effects are obtained when walls, woodwork, and floors are all treated in the same color.

Arranging the Work Station

Having the equipment arranged appropriately is very important since a well planned home work station can enable you to complete your work with the least possible wasted motion. Utilization of all available space will achieve the most efficient work flow. Exercise 5 provides you with the opportunity to design a home office. This exercise should help you experience some of the more difficult situations involved in home office planning: arranging all the necessary equipment in a set amount of space. Exercise 6 enables you to compute the total start-up cost for the home work station, including the cost of hardware, software, supplies, furniture, and miscellaneous expenses.

Now that you have (a) selected your room arrangment for your home office, (b) identified the needed furnishings and accessories, (c) planned the location of the equipment, furniture, and accessories, (d) considered the environmental effects, and (e) looked at the income tax guidelines for deducting the expenses of operating your home office, you are ready to start telecommuting. What is telecommuting, and how does it work? To find out, turn to the next chapter.

TELECOMMUTING

For the home worker to be successful, some method of communicating must be used. One basic communications method is the writing of letters, reports, and orders are delivered by the federal postal or private delivery services and often used by mail-order home-based businesses. Another means of communicating is the telephone; shippers may be contacted, supplies ordered, or new customers contacted. A third communication method of involves the home worker actually picking up work to be completed and then returning the completed work to the company, business, or customer.

All of these methods enable home workers to communicate with those for whom they work, but with limited satisfaction.

- Letters, reports, and so forth sent by private or postal delivery services often are slow or expensive or both.
- Telephoning can result in a game called "telephone-tag." You call someone who is out of the office but who will return the call; the call is returned but you're not in; you call again and the person has left for a meeting and won't return until the next day. Telephone tag can result in a waste of time and a possible loss of money.
- Commuting to and from one or many companies is costly both in time and travel expenses. Time spent commuting could be used for completing assignments. Fighting traffic, paying for parking, or fares paid for buses, trains, or cabs, can add up very quickly and may reduce the worker's earnings dramatically.

There is an alternative and this alternative is called "telecommuting." The importance of telecommuting, the ways it can be and is being used by home workers, and the effect of telecommuting in information processing will be presented in this chapter.

Telecommuting--Its Beginning

"Telecommuting" is a term coined by University of Southern California faculty member Jack Nilles (1976) to describe the use of telecommunication and computer systems as a substitution for commuting to work. Those who telecommute work at a remote site (at home or in a satellite work center) and communicate to one or many centralized work centers by computer and telephone networks. Though relatively few individuals have chosen to be in the forefront of this shift in work patterns, it is conservatively estimated that as many as 7.5 million workers (that is 15 percent of the information industry) could telecommute (Grieves, 1984).

Telecommuting and Information Occupations

Statistics indicate that information occupations engage over 50 percent of workers in the labor force (Smith, 1983). Nilles (1976) describes these workers as persons whose primary job is to move, manipulate, and/or transform information in some way or other. Central to the maintenance of an information economy is high-speed, complex communication equipment, and those individuals who wield the specialized skills to operate it.

According to Nilles (1976), information-related job tasks are those primarily involving collecting, summarizing, using, and communicating information such as secretarial, computer programming, and so forth. Workers in these types of jobs produce a commodity (information) that can be easily transferred from one location to another by using telecommunication technology.

Telecommuting and the Word Processing System

Although our discussion will be limited to the information worker who works in a business office as a secretary and uses information processing equipment and telecommunications equipment, it cannot be stated strongly enough that the term information worker refers to many types of occupations including clerical, computer programming, bookkeeping, and others. The concept of processing words involves more than equipment. Fully developed word processing is a *system* composed of specialized people, sophisticated machines, efficient procedures, and a pleasant environment. As a system, word processing coordinates these elements to transform ideas into written communication (Casady, 1980).

Word processing cycle. The word processing system goes through various steps as the words flow to form a cycle. The five basic steps that comprise the cycle are Input, Output, Revision, Distribution, and Storage. Similar terms for each are given to help you identify their meanings:

- Input--origination or creating thoughts using words
- Output--producing typed or printed copy
- Revision--changing, correcting, or editing the copy
- Distribution--sending, transmitting, delivering the copy
- Storage--filing and retrieving the hard copy as well as the media on which the words are recorded

Businesses process words by coordinating the same five steps that form a system. A closer look at each element of the cycle shows that systems vary; there are different ways to perform each step.

Input: putting thoughts into words. The term "input" refers to the methods by which communications originate. The three most common methods are: (1) Longhand; (2) Shorthand Dictation; and (3) Machine Dictation. Rough draft can also be considered an additional method of input.

A business executive might dictate letters to a secretary who records each word in shorthand. Or, the executive might dictate on a dictation machine. The executive might hand write or use a typewriter to "rough out" the composition and then use a pen to mark the corrections and changes.

A more recent input method uses optical character recognition (OCR) equipment. Basically, this equipment transfers typed material from a page onto magnetic media for further processing on a company's word/information processing units. The use of OCR extends word processing entry capabilities to every office typewriter, and every office secretary can key material to be input into the system (Baber, 1984).

Output: producing words. The next step in the word processing cycle is getting the input into its final form by keyboarding or printing. This may include incorporating some changes in the copy, which is referred to as editing. The result of transcribing from longhand, shorthand notes, rough draft, or machine dictation is called output. This output may be in the form of a printed page called hard copy (including multiple copies), an electronic message transmitted over telephone lines to an information processor in another location, or a message stored temporarily or permanently on magnetic media such as tapes, cards, or floppy disks (Will & Dake, 1982).

Revision: editing words. Revision means that words are corrected, added, deleted, or replaced to improve the content of the document. Another word used to describe this process is editing. Revision can occur during dictation (input), or as copy is being produced at the typewriter (output), or it can be a separate function after output.

One of the features of a word processing system is that even after input and output, the copy can be revised without retyping the entire copy. When the manager receives the typed output to edit, the corrections and changes are marked with pen. The edited copy is then returned to the secretary who rekeys only where changes are to be made. The magnetic disk can be advanced to allow the operator to skip over the correct parts and then stop where words need to be changed. Once all the revisions have been made, the entire document can be played back and a final copy produced at high speed.

Distribution: transmitting words. Once a document has been corrected to make the final, error-free product called a "hard copy" it is ready to be sent to its receiver. Distribution can occur by several methods--the company mail or delivery system, the U.S. Postal Service, or electronic mail. Electronic mail would include communicating information processors, TWX/Telex, facsimile, mailgram, or communication satellite networks.

Storage maintaining records. Storage involves all aspects of filing and retrieving of typed and written words. In the word processing cycle, there are two items that require storage--the typed or printed page (hard copy), and the recorded medium (card, cassette tape, or disk).

For the home worker to work with a company as an information processor, certain equipment must be installed in the home work station. The equipment of the company and the home worker must be able to communicate. Such equipment could include:

- Information processor with word processing capability, including screen and keyboard
- Letter quality printer
- Facsimile machine
- Modem--or acoustical coupler
- Disk drives

With this equipment at the home office and in the company's office, telecommunications could be used to complete the following tasks:

- Handwritten or typewritten rough draft copies of letters and reports, telecommunicated from the company to the home worker using the facsimile machine
- Machine dictation, transmitted to the home worker via telephone lines
- Letters and reports, keyed by the home worker using the information processor and then transmitted to the company via telephone lines
- Revisions of documents, telecommunicated to the home worker using the facsimile machine
- Corrections made quickly by the home worker by recalling the original document stored on the disk and making the changes electronically

- Corrections having been made, printing the needed copies, addressing and mailing by the home worker and sending a file copy for storage via the facsimile to the company

- Orders received and processed by the home worker for company customers, and electronically transfer or telecommunicate these orders to the company.

Telecommuting Experiences

This section includes a brief scenario of four different home workers that deal with situations other than word processing. Telecommuting is suitable for a variety of occupations as described below.

Roger. Roger is a 23 year old data entry clerk who had worked for a medium-sized brokerage firm for four months before an automobile accident and subsequent surgeries required a long convalescent period. Since he had been an employee for such a short time, his benefits were not sufficient to provide for his living expenses but did cover his medical expenses.

Sara Thompson, the office manager and Roger's boss, suggested that he try working at home. In that way, he could remain a full-time employee with benefits until he was able to return to the office. It took one day to install Roger's terminal, printer, acoustic coupler, and telephone. The company loaned the equipment to Roger since he would be returning to the office.

He is able to work at his own pace, as long as he averages the same amount of work he did in the office. Roger has found that maintaining his current productivity is easy, but he really misses his friends at the office. The group of data entry operators have a great time together and often go out after work. He is counting the days until he can return to the office. Home work as a full-time, permanent job is not for Roger, but it has helped him during this period of time.

Evelyn. Evelyn Jones has always loved the mountains. The peace, the quiet, the isolation have always provided inspiration. So, when the cabin was for sale, she bought it. Free-lance writing requires the solitude the mountain cabin provided, so it seemed perfect.

The night before Evelyn's first deadline for her article for a magazine, a two-foot snow fell. Evelyn tried for three hours to get down the mountain. Finally, she had to go back to her cabin, call the office, and dictate the four page article over the phone.

As the roads cleared, Evelyn drove down the mountain and bought a personal computer with word processing capabilities. Now, Evelyn composes on the machine, edits, and sends the material on the same day. She also uses the computer to keep up with her banking, recipes, articles in progress, and deadlines.

Don and Andrea. Don and Andrea wanted to wait until they were financially secure before starting a family. Don is an accountant and Andrea is a computer consultant. They have a 1 1/2 hour, one-way commute from their offices in the city.

They excitedly awaited the arrival of their first baby. As they talked about the changes about to occur in their lives, they realized that their baby would be asleep most of the time they were home. A three-hour commute and an eight-hour work day added up to 11 of the 24 hours. It was upsetting to Andrea to realize that someone else would actually be "raising" her baby.

Don decided to check into alternatives. He looked at opening a branch of his accounting firm nearer to his home. The cost of office space was astronomical!

Andrea said, "I wish we could just work at home."

Don said, "GREAT IDEA!"

He took the proposal to the other partners of his accounting firm. The arrangement they worked out was for Don to commute to the office every Friday, but to work out of his home Monday through Thursday.

Andrea was so envious. Don said, "Why couldn't you do the same thing?" So Andrea went to her office and presented her idea to her boss, Jessica. Jessica was skeptical at first, but agreed to try it out for a few months. Andrea and Don went out that Saturday and bought two computers. Don had a dedicated data line installed; Andrea used a modem.

That was a year ago. Andrea goes into the office on Mondays, Don now goes in on Wednesdays and Fridays. They love being at home with Suzanne, now nine months old.

Although Andrea has a sitter come in every morning to take care of Suzanne, she and Don feel that they are saving enough in commuting costs to more than pay for the sitter.

If Andrea is asked if she will continue working at home, she says, "Oh, yes, for now. We'll have to see later, though."

Tom, Joyce, Kathy, and Bob. The corporate office of a pharmaceutical company is located in a large city. The company has grown rapidly in the last five years; so fast, in fact, that more office space is required. In the current facility, however, there is no more space available. Moving the office to a larger building is expensive; constructing a new building is even more expensive.

Tom, Joyce, and Kathy made up the Public Relations Department of his company. Kathy, as secretary, wanted to go part-time. Tom and Joyce discussed the possibility of that but decided that they generated too much work for a half-time secretary. Kathy said, "Bob, a college student in my apartment building, is looking for a part-time secretarial job. Would it be possible for us to share the job?"

As the discussion progressed, the pros and cons of job sharing were covered. It was decided to try the job sharing idea for a while. Kathy said, "Thanks, Tom and Joyce. You know, it's a shame Bob and I both have to travel all the way from our apartment building, going to the same place at different times of the day."

The information synthesized into the following idea. Joyce said: "Why can't we all work at home? That would free up three badly needed offices here."

The next day, Joyce and Tom went to the president of their company with their plan; Mr. Brown was receptive to the idea. The president told Tom and Joyce to work out the logistics and come back with a finalized plan.

The plan they came up with was to put the information processor for Kathy and Bob in Bob's apartment because he had a spare room. Kathy would work there in the mornings when Bob had classes and Bob would work in the afternoons. Their equipment would be furnished by the company.

Tom and Joyce could work at home as long as they were available to come in for staff meetings. However, Tom and Joyce would have to lease their equipment from the company. Since Joyce and Tom both had a long commute and had to pay for parking once into the city, they felt that the machine would basically pay for itself. This pilot program has worked so well that the company is offering the home-work option to a number of other clerical employees.

From this discussion it is easy to see that the telecommuting home worker may be involved in a range of occupations, from executive to clerical and data entry clerk. Characteristics of telecommuters have been defined as those individuals who are achievement motivated, persistent and disciplined, capable of planning, self-directed, and independent.

Work flow changes as individuals move home. The change in the flow of work is not an interruption of work, but merely a variation in the input, process, output, storage, recall, distribution, and retention of a document.

As illustrated by the four case studies, the reasons why individuals decide to work at home depend on the specific circumstances for those particular individuals. Before deciding to telecommute, a careful review of your situation, job characteristics, and personal characteristics should be made to determine whether working at home is reasonable alternative to the traditional office for you. Exercise 7 enables you to compare the economic advantages and disadvantages by looking at the commuting and telecommuting costs for your own situation.

In the next chapter, you will find some suggestions for structuring your time and work situation. These guidelines will prove to be very helpful to you as you begin to telecommute.

GUIDELINES FOR THE HOME WORKER

Making the most of the valuable time you save when you do not have to bother with expensive, time consuming commuting is important if you are to become a successful home worker. Some guidelines from those who have already experienced home work in the areas of structuring time, handling phone calls, reducing interruptions, blocking temptations, and keeping in touch are discussed below (Turla & Hawkins, 1984).

Structuring your time. To help build professional credibility, and to focus your energy, establish regular working hours. Discipline yourself to stick to those hours every day.

If possible, do not mix business with your personal life. Designate a specific area as your office. If you do not have a spare room for an office, consider investing in partitions to separate yourself physically and psychologically from the rest of the house. To signal the start of a business day, dress for work.

Stroll or jog around the block, or run in place on one of the small trampolines to get some exercise before work and return to your home office alert. Or go out for an inexpensive breakfast before you begin your workday.

Do not work until you are exhausted. Take breaks every few hours to energize yourself. If possible, eat lunch away from your office, perhaps with a friend.

Manage your time wisely. Once you have worked on your most important items, attack the less important in one sitting--toward the end of the day or the end of the week.

Have long-term as well as short-term goals in writing. Build your day around your valued objectives and do something every day to achieve those goals. Check off each goal as you complete it. Plan ahead and set deadlines. Meeting them will supply you with a feeling of success.

Handling phone calls. Chances are, if you work at home, you may not have anyone to answer the phone. In this case, you might want to use an answering service or an answering machine for the times when you are away from your office.

If you use an answering machine, keep your recorded message brief and businesslike. Ask callers to leave messages that state the nature of their business, instead of simply their names and phone numbers. This will discourage your neighbors who have a problem comprehending the fact that you are really working in your home from bothering you during the day. Also, it will help you to get to the point quickly when you return a call.

An answering service provides you with several options, depending on the service you choose: (a) If you are out of the office, calls are automatically forwarded to the answering service; (b) the service will answer your phone after so many rings; or (c) provide clients with two numbers--your office number and the number of your answering service if you can't be reached at the first number.

If possible, it's a good idea to have a separate telephone for business. That will cost more, but you won't resent family members tying up the line and vice versa. This will also enable you to have more control in the way the separate telephone is answered, in a businesslike and impressive fashion. A child or a teenager answering a business telephone may not provide the business image usually desired.

Reducing interruptions. While interruptions at home may be of a different nature than those you would expect in an office, the strategies for controlling them are similar. The following are some common sense ideas:

- If your children are older and your family is an extended one, ask the family members not to disturb you during working hours except in case of an emergency.
- If your children are small, it may be necessary to look for inexpensive, adequate ways to free several hours at one time (Suggestions: hire a teenager to come in after school to watch your child for 2-3 hours every afternoon; co-op a day care program with neighbors, or look into Mother's Day Out programs at various institutions in your area; have your spouse be responsible for the child/children for a few hours).
- Post your working hours on your fron door to discourage sales people from calling (or, if the hours are ignored, have someone else answer the door for you, another adult is preferred).
- Explain to friends that you keep regular working hours even though you work out of your home and ask them to observe your business hours and save social calls until later when you can give them your full attention.

Blocking temptations. When you work at home, there are many tempting diversions such as the refrigerator, television, music, pets, maybe someone to talk to, interesting reading material, and nearby stores. Stay focused. Eat only during breaks or you willnot be able to wear your clothes after a few months of working at home. Keep your television, pets, and other distractions away from your work area.

Keeping in touch. When you work at home you will find that you have fewer contacts with the people in your profession than you would if you were at the office every day. For fellowship, to keep current, and to make necessary contacts, join professional groups and business associations. This is referred to as professional networking and is a valuable use of your time. Arrange to work in the office at least once a week if possible, or plan to have lunch with your co-workers or other home workers once a week. Occasionally invite them to bring their lunch to your house and join you in your home work atmosphere.

Maintaining your personal life. People who work at home for themselves can have the most demanding bosses of all--themselves. Working overtime may be necessary, especially when you first start working at home. But do not let it become a pattern. When the office hours that you have established are over, call it a day and close up shop.

Also, you may find working in your home can become so attractive that you might be tempted to hole up there. To lead a more balanced life, and reduce stress, make a point of getting out of the house once a day. Set personal goals for recreation and hobbies.

As you have seen, time management is a very important factor in becoming a successful home worker. But are you sure you want to be a home worker? Can you determine if you, as an individual, are better suited for home work than office work?

Now that you have read about selecting hardware and software, designing your home work station, telecommuting, and some guidelines, you will be able to make some decisions regarding your own home work possibilities. You will feel confident when choosing hardware and software because you have learned how to evaluate before making a purchase. You have also learned about telecommuting and have read some experiences of those who telecommute. The guidelines have suggested ways to make your telecommuting more enjoyable and productive. You may, however, want to refer to the glossary and bibliography for further information. You are now ready to experience a day in a home worker's life and make informed decisions based upon the information presented in the guide by completing the simulation beginning on page 103.

IV. EXERCISES

Exercise 1

SELF ASSESSMENT SURVEY

The satisfied home worker is one whose personality and job fit together in a manner that indicates a high probability of success. In an attempt to assist you in determining if your personalty and job are such that home work is an option, the Self Assessment Survey and the Job Description Questionnaire have been developed. Read and follow the instructions for both instruments. The directions for interpreting the results follow the instruments.

The following set of statements are designed to assist you in determining your aptitude for working at home. Results of this survey should not be used exclusively to determine if you are suitable for remote work; instead, this information should be interpreted in the context of your life experience. The results of this survey are to be used as one source of information about your aptitude for home work.

Respond to each of the following statements by circling the response that best describes the way that you feel. Please use the following scale to indicate whether you: Strongly Agree (SA), Agree (A), are Neutral (N), Disagree (D), or Strongly Disagree (SD) with the statement.

SA A N D SD 1. People say that I have lead an unusual life.

SA A N D SD 2. I had difficulty learning while I was in school.

SA A N D SD 3. It is all right to get around the law if you don't actually break it.

SA A N D SD 4. I would enjoy moving to another country.

SA A N D SD 5. People are often jealous of my good ideas, just because they had not thought of them first.

SA A N D SD 6. I enjoy doing dangerous things.

SA A N D SD 7. I feel that I have often been punished without cause.

SA A N D SD 8. My opinion of myself goes up when I do a job well.

SA A N D SD 9. I feel a great sense of personal satisfaction when I do a job well.

SA A N D SD 10. I feel bad and unhappy when I discover that I have performed poorly on a task.

SA A N D SD 11. My own feelings are generally affected one way or the other by how well I do on a job.

SA A N D SD 12. Some problems exist for which no solution can be found.

SA A N D SD 13. I prefer doing a difficult problem rather than answering a simple one.

SA A N D SD 14. Most of life's problems are very complicated and do not have simple yes or no answers.

SA A N D SD 15. If you work hard, you will do well in life. Luck has little or nothing to do with it.

SA A N D SD 16. The average citizen can have an influence in government decisions.

SA A N D SD 17. When things go wrong, they are usually the result of lack of ability, ignorance, laziness, or all three.

SA A N D SD 18. More people should take responsibility for their actions.

To obtain your Self Assessment Survey (SAS) total, add the points scored for each statement together.

For statements 1 - 7, give yourself -3 points for every SA response, -2 points for every A response, 0 points for every N response, 2 points for every D response, 3 points for every SD response.

For statements 9 - 18, give yourself 3 points for every SA response, 2 points for every A response, 0 points for every N response, -2 points for every D response, -3 points for every SD response.

Record your points for the Self Assessment Survey here ____________.

Exercise 1

JOB DESCRIPTION QUESTIONNAIRE PART I

These statements are designed to determine if the nature of your present job may be suitable for home work. The results of this questionnaire should be used as a guide for assessing whether a particular set of tasks are suitable for a remote work program. This questionnaire will provide information about the amount of structure provided to you by your job. This information should be used as one factor in determining the feasibility of establishing a work-at-home project.

Please respond to each statement by circling the response that best describes the way you feel. Use the following scale to indicate whether you: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD) with the statement.

SA A N D SD 1. I know exactly what I must do to successfully complete my job.

SA A N D SD 2. There is at least one person available to advise me and/or describe what I must do on my job.

SA A N D SD 3. There are standard operating procedures that outline the way work is to be conducted for my job.

SA A N D SD 4. There are specific ways to divide my job into separate parts or steps.

SA A N D SD 5. There are some ways of performing my job that are clearly better than others.

SA A N D SD 6. For my job, it is obvious when the work is finished and complete.

SA A N D SD 7. When my job is finished it is clear that the correct solution has been found.

SA A N D SD 8. At work, everyone knows the standards necessary to attain for acceptable job performance.

SA A N D SD 9. The standards used to evaluate my work are rational and objective, not judgmental and subjective.

SA A N D SD 12. There is sufficient time between tasks to make any changes or corrections necessary to improve future performance.

To score Part 1, give yourself 2 points for every SA response, 1 point for every A response, 0 points for every N response, -1 point for every D response, -2 points for every SD response.

Record your score for Part 1 here ________________.

Exercise 1

JOB DESCRIPTION QUESTIONNAIRE PART 2

For the following statements, place a check in the space that best indicates the degree to which each of the following factors describe the work that you perform, your immediate supervisor, and your co-workers.

The work is:

	A	B	C	D	E	
Fascinating						Boring
Pleasant						Unpleasant
Challenging						Dull
Satisfying						Dissatisfying
Structured						Unstructured
Varied						Routine

My supervisor is:

Bad						Good
Incompetent						Competent
Stupid						Knowledgeable
Lazy						Hardworking
Unavailable						Available
Inflexible						Flexible

My co-workers are:

Boring						Stimulating
Slow						Fast
Dull						Intelligent
Unfriendly						Friendly
Irresponsible						Responsible
Hindering						Helpful

Add the results of the first and second sections to obtain the total Job Description Questionnaire score.

To score the Part 2 give yourself 2 points for every A response, 1 point for every B response, 0 points for every C response, -1 point for every D response, -2 points for every E response.

Record your score for Part 2 __________.

Exercise 1

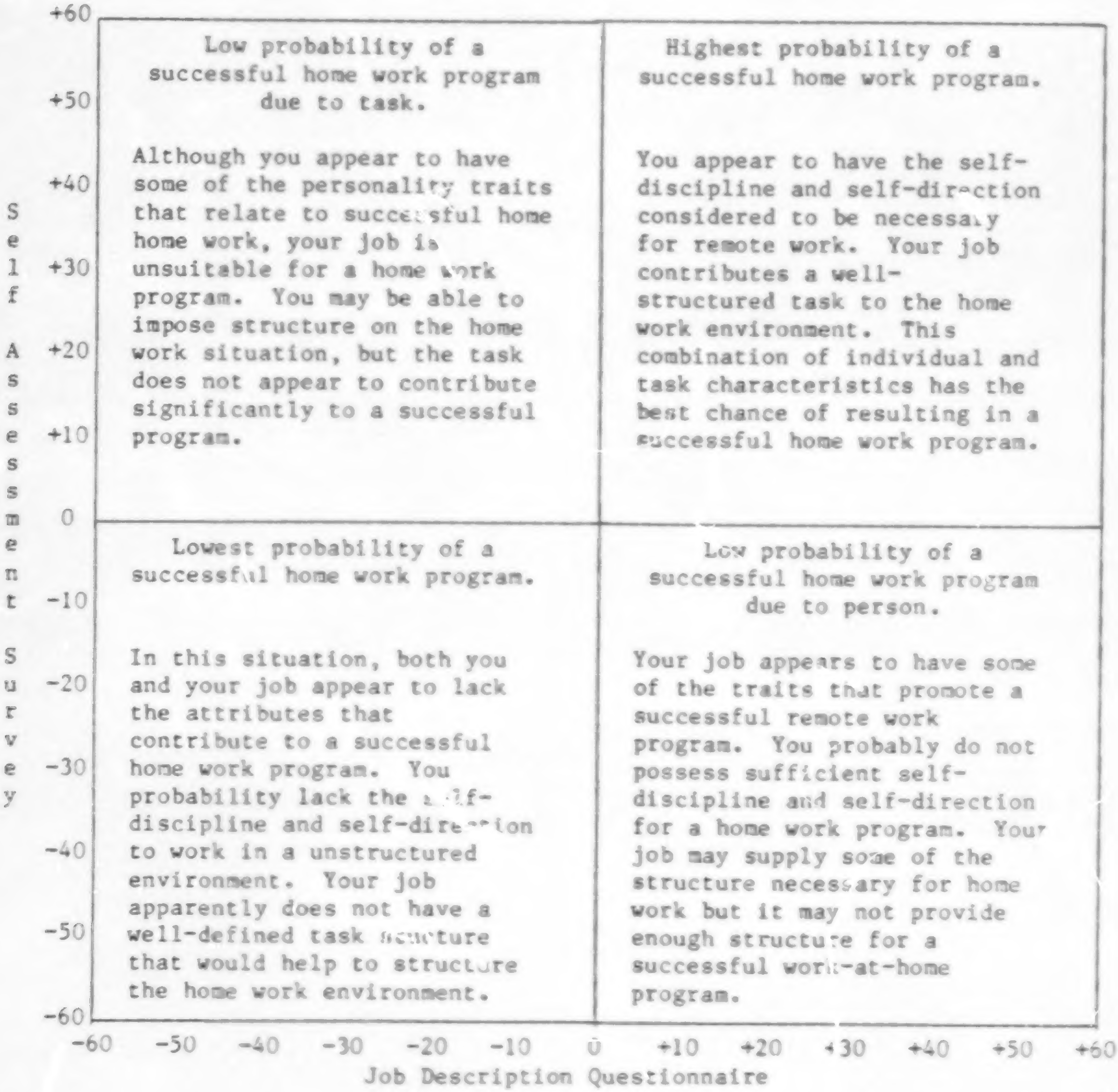
Add together your scores from the Self Assessment Survey and the Job Description Questionnaire Parts 1 and 2.

Record your total points here __________.

To find out whether you should consider remote work as an option, locate the square that represents the results of your SAS and JDQ scores. The text in each square explains the combination of SAS and JDQ scores and rates the probability of a successful work-at-home program. The probability ratings are estimates based upon the best available data. These ratings are only estimates, and should be interpreted in the context of the specific work situation and person.

Exercise 1

HOME WORK POTENTIAL GRID



Low probability of a successful home work program due to task. Although you appear to have some of the personality traits that relate to successful home home work, your job is unsuitable for a home work program. You may be able to impose structure on the home work situation, but the task does not appear to contribute significantly to a successful program.	Highest probability of a successful home work program. You appear to have the self-discipline and self-direction considered to be necessary for remote work. Your job contributes a well-structured task to the home work environment. This combination of individual and task characteristics has the best chance of resulting in a successful home work program.
Lowest probability of a successful home work program. In this situation, both you and your job appear to lack the attributes that contribute to a successful home work program. You probability lack the self-discipline and self-direction to work in a unstructured environment. Your job apparently does not have a well-defined task structure that would help to structure the home work environment.	Low probability of a successful home work program due to person. Your job appears to have some of the traits that promote a successful remote work program. You probably do not possess sufficient self-discipline and self-direction for a home work program. Your job may supply some of the structure necessary for home work but it may not provide enough structure for a successful work-at-home program.

Exercise 2

SOFTWARE NEEDS ASSESSMENT

This exercise will assist you with identifying software capabilities which you need (or anticipate needing) to successfully perform work in the home setting.

To complete this form, read the capabilities listed in column 1 on the following page. Check the items you feel are essential or will be essential in the future.

Exercise 2

SOFTWARE NEEDS ASSESSMENT

CAPABILITIES OF SOFTWARE	PRESENT NEED	ANTICIPATED NEEDS
General Letters	____	____
Form Letters	____	____
Mass Mailing	____	____
Merging	____	____
Long Documents	____	____
Editing	____	____
Addressing Envelopes	____	____
Outlines	____	____
Dictionary/Spelling Check	____	____
Graphs and Charts	____	____
Spreadsheeting	____	____
Accounting/Bookkeeping	____	____
Inventory	____	____
Data Base Management	____	____
Other (List)		
____	____	____
____	____	____

Exercise 3

HARDWARE, SOFTWARE, AND SUPPORT CONSIDERATIONS

After filling out the Software Needs Assessment form, it will be necessary to contact vendors in your area to determine which system will best suit your particular situation. Make a copy of Exercise 3 for each vendor.

Then, ask the vendor if the software you need now and anticipate needing in the future are available for that machine. Check the ones that can be obtained for that particular system. After filling out Exercise 3 for each system, it will be easy to compare the capabilities of the machines and the software available for them.

Exercise 3

HARDWARE, SOFTWARE, AND SUPPORT CONSIDERATIONS

COMPANY NAME ______________________________ PHONE # ________________

Microprocessor

Name ______________________
Bit Size ____________________
ROM Size ___________________
RAM Size ___________________
Cost of Microprocessor $ _______________

Printer

Type of Print ________________
Sheet Feeder Available ______
Tractor Feed ______________
Cost of Printer $ _______________

Modem

Baud Rate __________________
Cost of Modem $ _______________

Monitor

Color or Monochromatic _______
Columns __________________
Lines ____________________
Size of Screen ______________
Glare or Non-Glare ___________
Cost of Monitor $ _______________

Disk Drives

# Drives ___________________
Type and size of disk ________
K ________________________
Cost of Disk Drives $ _______________

Voltage Regulator or Line Filter
Cost $ _______________

Exercise 3

Keyboard

Detachable/Non-detachable_____
10-key pad available__________
Cursor controls_______________
Special characters ___________
Function keys ________________
Cost of keyboard $__________________

Installation Costs $__________________

TOTAL COST $__________________

Exercise 3

COMPANY NAME____________________________

Training

On Site______________________
At Vendor's Office____________
Cost of Training $_______

Maintenance

Will the equipment have to be shipped if it goes down_____
Service on site_______________
Service personnel employed by vendor or independent_______

Warranty

Length of time_______________
Terms_________________________
Cost of warranty $_______

Vendor support

Name and address of person to be contacted for help/information
____
____
____

Trade-in or Resale Value $_________

Names of Current Users of this machine
____
____
____
____

Length of time vendor in business__

SOFTWARE

General Letters__________

Form Letters_____________

Mass Mailing_____________

Merging__________________

Long Documents___________

Editing Capabilities_____

Addressing Envelopes_____

Outlines_________________

Dictionary/Spelling Check__

Graphs and Charts________

Spreadsheeting___________

Accounting/Bookkeeping____

Inventory________________

Data Base Management______

Other (List) _____________
____

Operating Systems
CPM/MSDOS Based_______

Exercise 4

SOFTWARE EVALUATION

Software typically is referred to as a "package." Included in this package is the disk and instructions on how to use it. Some packages will send an identical disk to serve as a backup if the first one is damaged in some way. Some companies will also send out any updates or changes in that package. Be sure to ask about these updates and changes as some companies charge for this service.

The purpose of this exercise is to enable you to acquire basic information on software and to give you an opportunity to ask key questions about software before purchasing it.

- Use the list of Software Capabilities Needs prepared in Exercise 2, asking a vendor what packages are available.
- Enter the name, version, and cost of the package on the form on the next page.
- Ask the vendor the specifics on that particular package as to updating, operating system, memory, hardware, and back-up.
- Determine the answers to the key factors listed on the next page by either asking the vendor, reading about the software in magazines, or trying out the software.
- Collect this information on as many of these packages as you feel are necessary, then compare the packages to determine which is most suitable for you.

Exercise 4

SOFTWARE EVALUATION

Basic Information

Package: Title ______________________________

Version ____________________________

Cost ______________________________

Purpose: Data Base Management _______
Word Processing _______
w/spelling check _______
w/mail merge _______
Spreadsheeting _______

Operating System: ____________________________________

Memory Capacity: _____________________________________

Hardware Required: ___________________________________

Backup Policy: _______________________________________

Update Policy: _______________________________________

Key Factors

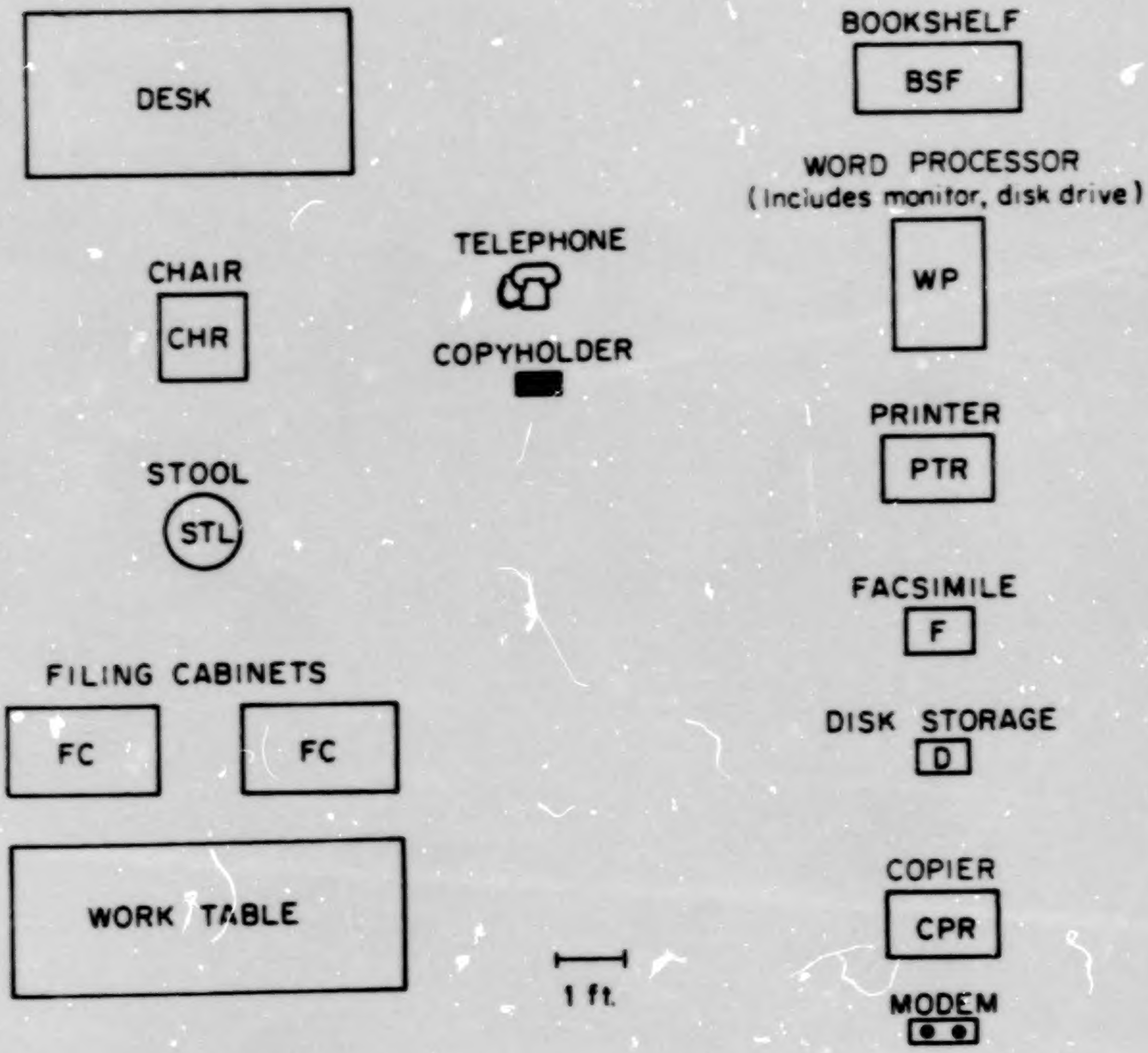
Ask the vendor about the following, review the software in current computer magazines, and try out the software for yourself to check for these key factors:

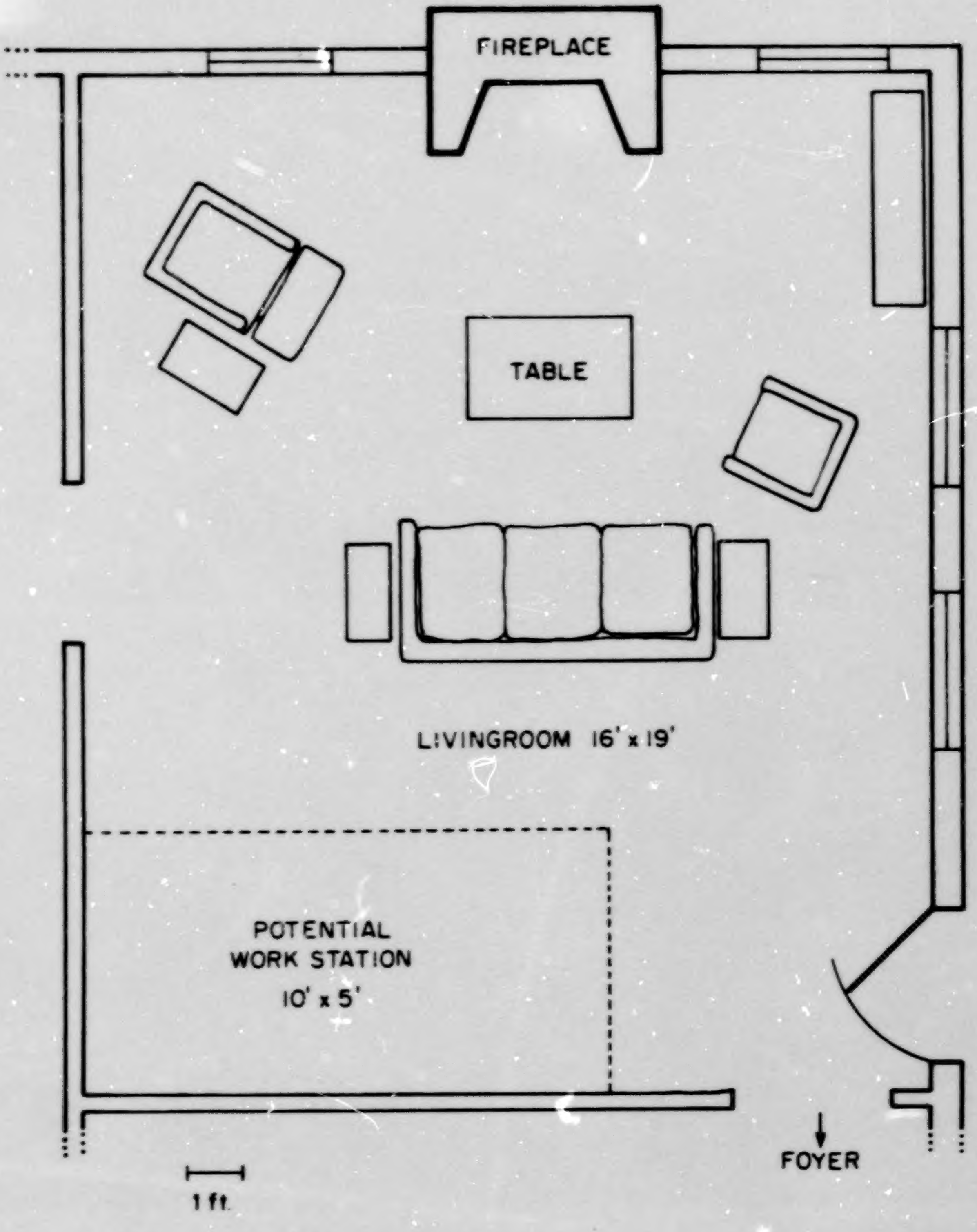
- Program is suitable for needs (identified in Exercise 2)
- Program is adaptable to present and anticipated needs
- Assistance for program use is provided
- Screen displays are easy to read and use
- Adequacy of prompts for data entry are provided
- Capacity is adequate
- File maintenance is adequate
- When capacity is reached, system warns user
- Files are easily copied
- Program provides for protection of confidential data

Exercise 5

DESIGN YOUR WORKSPACE

Select the equipment you feel will be necessary for you perform your job adequately. Cut out the pieces of equipment you selected. Arrange it in the space allocated in the room setting on the next page or draw to scale (3/8" = 1 ft.) the amount of space you have available for your home office.


DESK
BOOKSHELF
BSF
WORD PROCESSOR
(Includes monitor, disk drive)
WP
TELEPHONE
CHAIR
CHR
COPYHOLDER
PRINTER
PTR
STOOL
STL
FACSIMILE
F
FILING CABINETS
FC
FC
DISK STORAGE
D
WORK TABLE
COPIER
CPR
1 ft.
MODEM


FIREPLACE
TABLE
LIVINGROOM 16' x 19'
POTENTIAL
WORK STATION
10' x 5'
FOYER
1 ft.

Exercise 6

START-UP COSTS

This exercise is designed to give you an idea of how much it will cost to start working in your home. These costs will vary greatly depending upon whether or not your are working for one company who has agreed to let you work at home or are an independent contractor working for several companies. If you are working as an employee for one company, your employer should provide some (if not all) of the supplies for you.

Place the estimates from Exercise 3 for the cost of hardware and software in the appropriate blanks. Add those together and put in the "total" column.

Read through the supplies that are listed and check off the ones needed for the job. (Prices listed were determined by going through a 1984 office supplies catalog and finding the least expensive of all items). For those items checked, put the cost in the right hand column. Total the supply cost. Then, add the total supplies to the equipment, furniture, and phone hook-up to get the cost of starting up your office.

Exercise 6

START UP COSTS

Telecommuting Equipment

Hardware ______________________

Software ______________________

Total Hardware and Software ____________

Supply List and Approximate Prices

Check here if needed		
	Ball point pens, .19+	
	Calendar book-opening loose-leaf, base 4.10+	
	refill 3.25+	
	Calendar desk pad, 3.40+	
	Crank pencil sharpener, 12.10+	
	Correction fluid, 1.19+	
	Desk lamp, 19.95+	
	Diskettes, 10/box, 35.00+	
	Diskette storage box, 8.05+	
	Envelopes, plain, No. 10, 500/box, 10.10+	
	File folders, 100/box, 10.20+	
	File guides, set 6.60+	
	In/out baskets, set, 20.45+	

Exercise 6

________	Name, phone # file, desk top, 14.98+	________
________	Notepads, 3 x 5, 1 doz., 2.85+	________
________	Paper clips, 100/box .48+	________
________	Paper hole punch, hand-held single punch, 1.60+	________
________	Pencils, 1 doz., 1.70+	________
________	Plain paper, 1 ream, 5.30+	________
________	Printer Cartridges, 1 box, 45.00	________
________	Printing calculator, 65.00+	________
________	Rubber bands, 1 lb. box, 4.25+	________
________	Tape dispenser, 4.02+	________
________	Tape 1/2" roll, 1.36+	________
________	Scissors, 2 1/2" cut, 3.10+	________
________	Secretarial handbook, 10.95+	________
________	Spelling word/division book, 2.95+	________
________	Staple remover, 1.00	________
________	Stapler, 9.95+	________
________	Staples, 1 box, 1.90+	________
________	Thesaurus hard back, 11.95+	________
________	Trash basket, 4.80+	________
	Furnishings	
________	Desk	________

Exercise 6

__________ File cabinets __________

__________ Chair __________

__________ Miscellaneous __________

Total Furnishings __________

Total Supplies __________

Total Start-up Costs __________

Exercise 7

COST OF COMMUTING VS. COST OF TELECOMMUTING

This exercise is designed to estimate if moving your work home would cost you less than the traditional method of commuting to a centralized work place. Page 101 is a summary sheet to be used for the comparison between the traditional commuting and telecommuting. Pages 96 to 100 are work sheets that will enable you to estimate your costs for commuting and telecommuting.

Commute Cost

Line 1. Cost of driving:

If you do not drive your car, put -0- on line 1d and line 1, page 101.

A. Take the number of miles to work one way (enter on line 1a). 1a. ________
B. Multiply line 1a by 2 (enter on line 1b). 1b. ________
C. Multiply line 1b by $0.25 per mile [as figured by 6.9¢ for depreciation, 4.2¢ for maintenance and parts, 9.3¢ for gas and oil, 2.4¢ for insurance, and 2.2¢ for taxes] (enter on line 1c). 1c. ________
D. Multiply line 1c by 5 to get a weekly total for travel (or by the number of days you drive, if you are in a carpool). Put this number on line 1d and line 1, page 101. 1d. ________

Line 2. Cost of bus, vanpool, or subway:

If you do not take the bus, ride in a vanpool, or take the subway, put -0- on line 2c and line 2, page 101.

A. Figure the cost of a one way fare (enter on line 2a). 2a. ________
B. Multiply line 2a by 2 for a round trip (enter on line 2b). 2b. ________
C. Multiply line 2b by 5 for an entire week (enter on line 2c and line 2, page 101). 2c. ________

If your transit authority offers discount tickets for frequent riders, use the discount cost. Determine the amount for the ticket. Divide that amount by the number of trips allowed per ticket. This total will give you an adjusted cost for one trip.

Line 3. Train transportaton:

If you do not take the train, enter -0- on line 3c and line 3, page 101.

A. Determine the cost of taking the train one way (enter on line 3a). 3a. ________

B. Multiply line 3a x 2 to get the cost of riding the train for one day (enter on line 3b). 3b. ________

C. Multiply line 3b x 5 to get the cost of riding the train for a week. Put the total on line 3c and line 3, page 101. 3c. ________

Line 4. Cab fare:

If you do not take a cab, put -0- on line 4c and line 4, page 101.

A. Determine the average cab fare to your office, one way (enter on line 4a). 4a. ________

B. Multiply line 4a x 2 to figure the round trip fare (enter on line 4b). 4b. ________

C. Multiply line 4b x 5 to determine the cab fare for a week. Put that amount on line 4c and line 4, page 101. 4c. ________

Line 5. Parking:

If you do not have to pay for parking, put -0- on line 5d and line 5, page 101.

A. If you pay for parking by the month, divide the total amount by 4.3 [the number of weeks in a month] (enter on line 5a). 5a. ________

B. If you pay for parking by the week, put that figure on line 5b. 5b. ________

C. If you pay for parking by the day, multiply that x 5 and enter on line 5c. 5c. ________

D. Total lines 5a, 5b, and 5c. Enter on line 5d and line 5, page 101. 5d. ________

Line 6. Lunches:

Determine the average amount you spend on lunch every day. If you eat lunch out every day, determine the average cost for a day. Deduct from that the amount you would spend for a lunch you prepared at home. Multiply the average amount spent on lunch per day x 5. Enter this amount on line 6a and on line 6, page 101.

6a. ________

Line 7. Child care:

If you pay for child care, determine the amount for the week. Put that amount on line 7a and line 7, page 101.

7a. ________

Line 8. Clothing costs:

The amounts to be included on this line are only those that can be directly linked to work. For example, estimate the amount you spend on clothes each month, but only include those purchased for work. Add to that amount the average you spend on dry cleaning or work clothes laundered professionally or in coin machines. (Do not include regular household clothes washing and drying, because you would have that cost even if you stayed at home.) Divide the monthly clothing amount by 4.3 to get a weekly average. Put this amount on line 8a and line 8, page 101.

8a. ________

Line 9. Cost for time spent in commuting:

Take the amount of time you spend traveling to and from work. Convert it to hours (use an approximation). Multiply that times your hourly wage. Put that amount on line 9a and line 9, page 101.

9a. ________

Telecommute Cost

Line 10. Cost of equipment:

Many times the company will bear the cost of the equipment. However, if you are to work on a contract basis or if you rent or purchase your equipment, you will need to record your cost of the machine per month (including maintenance, service, cost of the machines, insurance on the machine, and so forth). If your employer is paying all costs, put -0- on line 10d and line 10, page 101. Otherwise, compute your cost using the estimates from lines 10a to 10d.

Monthly payment (enter on line 10a). 10a. ________
Monthly maintenance/service (enter on line 10b). 10b. ________
Insurance [yearly premium divided by 12] (enter on line 10c). 10c. ________
Add these three together and divide by 4.3 to get a weekly total (enter on line 10d and line 10, page 101). 10d. ________

Line 11. Cost of additional telephone lines:

If it is necessary to install additional telephone lines to hook-up and operate your machine, a monthly charge will be assessed by the telephone company. You can find out what this charge is by calling their business office. Divide this monthly charge by 4.3 to convert it to a weekly amount. Put this amount on line 11a and line 11, page 101. If there is no charge, put -0- on line 11a and line 11, page 101. 11a. ________

Line 12. Loss in benefits:

The company you work for may consider you as a part-time worker after you move home. If this is the case, or if you intend to work on a contract basis, you may lose the fringe benefits of a full-time employee. You will need to talk to the personnel officer of your company to help determine this. Some specifics to ask about are:

Health/dental insurance per month ________
Life Insurance ________
Profit sharing per month ________
Retirement per month ________
Sick leave per month ________
Annual leave or vacation days per month ________
Others ________
Add these together and divide by 4.3 to get a weekly amount (enter on line 12a and on line 12, page 101). 12a. ________

Line 13. Increase in gas/electric/phone bills:

Our studies have shown that if you have metered phone service for local calls, your bill will increase approximately $5/month. While the cost of heating and/or cooling may be negligible, it may be raised as much as

$5/mo. Enter the amounts that apply to you on line 13a and line 13, page 101. Be sure to figure costs as a weekly charge, not monthly.

Increased gas/electric costs ________
Increased telephone costs ________
Total increased costs (enter here and on line 13, page 101). 13a. ________

Line 14. Furniture:

If you find it necessary to purchase furniture for your equipment, figure the weekly cost and enter it on line 14a and line 14, page 101. 14a. ________

Line 15. Child Care Costs:

You may find that even if you telecommute, you will still incur child care costs. If you take your child to Mother's Day Out or a day care center, even for a few hours a day, figure this cost for one week. Put that amount on line 15a and on line 15 page 101. 15a. ________

Although not included in this activity, another aspect to consider is that of IRS deductions, which can be viewed as a savings. The amount of the IRS deduction you can claim depends on a number of factors. To find out what you can claim and how to claim it, order Publication 587 from the Internal Revenue Service. The amount of deductions that you may receive from the IRS may affect your cost estimates for commuting and telecommuting so it is recommended that you obtain IRS Publication 587 and estimate your possible tax savings or check with an accountant about the current tax regulations. Then enter the estimated tax savings on line 16, page 101.

Total the amount of cost for commuting on page 101. Then, total the cost for telecommuting. Compare the total cost of commuting with the net cost for telecommuting. These figures should give you an estimate of the relative costs for each option. You must decide which option is best for you.

Exercise 7

SUMMARY

Commuting Costs

1. Cost of driving in your car for one week ________
2. Cost of bus for round trip or vanpool for one week ________
3. Cost of train transportation for one week ________
4. Cab fare ________
5. Cost of parking your car ________
6. Lunches ________
7. Child care ________
8. Clothing costs ________
9. Time spent in commuting ________

Total commuting cost ________

Telecommuting costs

10. Cost of machine ________
11. Cost of additional telephone lines ________
12. Loss in benefits ________
13. Increase in electric/gas bills ________
14. Furniture ________
15. Child Care Cost ________

Total telecommuting cost ________

16. Subtract possible IRS deductions ________

Net cost for telecommuting ________

V. SIMULATION

A DAY IN THE LIFE OF A HOME WORKER

This simulation consists of decision making situations that might occur for a home worker. DO NOT READ STRAIGHT THROUGH THIS SECTION. Start with Section 1, read the situation, make your decision, and turn to the next Section as directed, appropriate to your decision. This will allow you to read through the simulation several times, making different decisions and experiencing the different consequences of your decisions.

There are approximately 50 critical incidents that have been presented in this simulation identified by research and study of actual home workers to give you an opportunity to see how a decision can affect the flow of work, cause interruptions, and elicit unforeseen problems. There are 18 different endings to the day. With the chart presented on the next page, you can see how the situations branch out. After reading though the day, check off the ending you chose on the chart, go back to one of the branches, and take the alternative. You are encouraged to read all the branches and endings, as the issues that are addressed include isolation, family-work role conflicts, communications patterns, child care concerns, motivations for working at home, co-worker attitudes, managment concerns, and others. These issues are important, and you should be alerted to them.

For this simulation, assume you are a woman currently working at home for Mr. Dobbs, treasurer of a medium-sized manufacturing concern. He has consented to let you work at home because he considers you a valued employee. You had gone to him three months ago and told him that family obligations were forcing you to quit. Your husband had received a promotion but was going to have to travel a lot. As you and your husband had discussed this, you felt that a part-time secretarial job closer to home would be better to help the kids with their adjustment to Daddy being gone.

Your three children are school age, but the lack of adequate day care facilities for them after school was a primary concern. The person who was keeping them for you was moving out of town. Yes, quitting your job with Mr. Dobbs was the only solution.

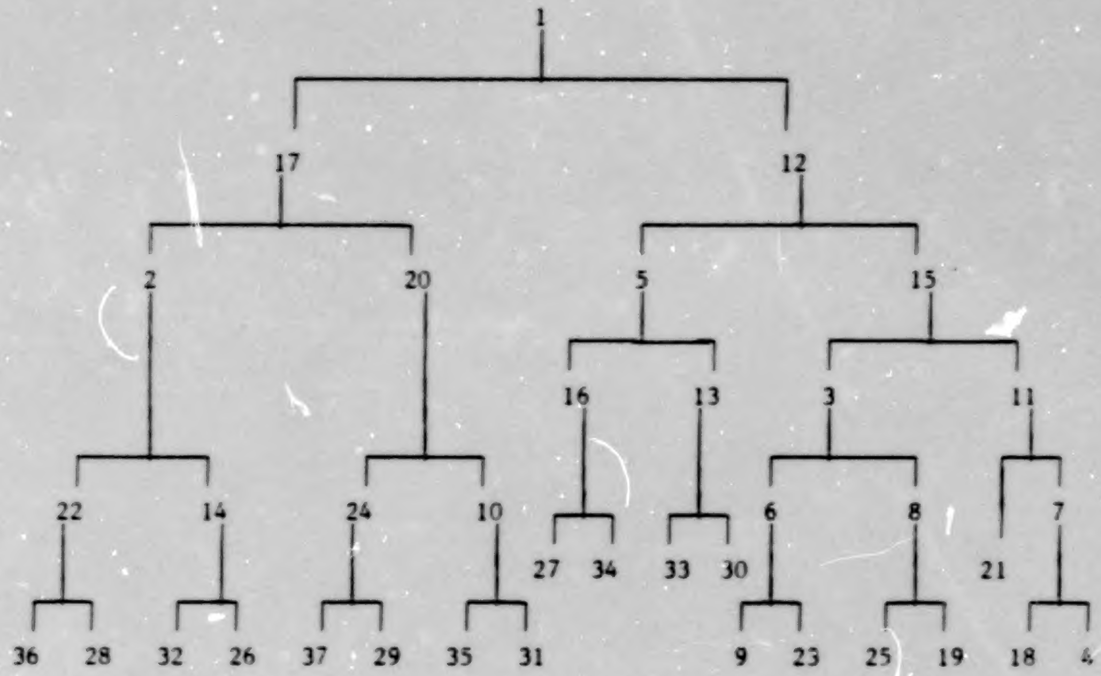
As you discussed all of this with Mr. Dobbs, he asked you to give him three or four days to think of an alternative. Two days later, he walked into your office and asked if you would like to "telecommute." At that point, you didn't even know what telecommuting was. Together, you worked out the communications, equipment, and work flow. He asked that you come into the office every other Wednesday from 8:00 a.m. to 12:00 p.m. for the staff meetings and to handle any problems. At that time, you could pick up any mail, meet with your friends, and get needed supplies. If your husband was in town and you needed anything from the office, he could pick it up and bring it to you.

That was three months ago. You've now been home for 10 weeks. Most adjustments have been made.

Read through the situations that occur on this day and make your decisions. Remember, this is only one day in the life of a home worker.
****

This chart demonstrates the branching effect of the simulation. You can follow your decisions on this chart and check off the particular path and ending you choose. In that way, you will know which of the paths you have taken and which of the endings you have already read. In addition, you will not have to go back to the beginning every time you read the simulation. Just go back to another branch and start again at that point.

FIGURE 3
SIMULATION DIAGRAM


1
17
12
2
20
5
15
16
13
3
11
22
14
24
10
6
8
7
27
34
33
30
21
36
28
32
26
37
29
35
31
9
23
25
19
18
4

Section 1

It is 8:00 a.m. After getting everyone off to school or work, showering, and dressing, you go to your "office" in one corner of the den. As you turn on the terminal and boot it up, you check for any messages. There is a message from your boss. It reads, "The 10-page report for Mr. Roberts needs to be completed by noon. If there are any problems with that, please call." You have already keyed in and edited five pages of the report, so you think "no problem!" As you get out the supplies and prepare to work on completing the report, your phone rings. It is Mary Johnson, your next door neighbor. She says,"I've got to leave at 9:00 a.m. for a dentist appointment, but I'd like for you to come over for a quick cup of coffee. I have to be sure to leave at 9:00 a.m., because it took me six weeks to get this dental appointment." Mary has been out of town for two weeks on a second honeymoon, and you haven't seen her since she got back. Do you go over to Mary's? If you decide to go to Mary's, turn to Section 17, page 114. If you decide not to go to Mary's, turn to Section 12, page 111.

****

Section 2

As you drive to the school to pick up Mary's kid, Jason. You keep thinking of the Roberts report that has to be finished by noon. It is now 9:20 a.m.

You enter the school, go to the clinic, and get Jason Johnson. He sees you and immediately bursts into tears. You pick him up and carry him to your car.

By the time you get home, the kid has stopped screaming. You take him inside and take his temperature. The thermometer reads 99.3° (too sick to stay at school, too well to feel bad). You fix the kid a snack and a drink. You turn on the TV and place him on the sofa with blanket and pillow.

You sit down at your machine, turn it on, locate all your supplies, find where you left off on the report, and start to work. It is 10:15 a.m. Crash! Jason has broken the glass still half full of strawberry soda. You clean it up, re-gather your wits, and start back to work. As you are about to update a page, the kid says "What's this?" and pulls the plug out of the wall, losing all you've done. It is now 10:45 a.m. Do you call the office and tell them the report will be late or try your best to finish the remaining five pages?

If you call the office, turn to Section 22, page 117. If you type, turn to Section 14, page 112.
****

Section 3

Starting at the beginning is never fun, but sometimes it's something you have to do. The same thing has happened in the office before, and at least you have a clean, typed copy from which to work.

At 10:35 a.m. you take the phone off the hook, get a cup of coffee, and sit down at the machine. By 11:45 a.m. you have finished rekeying the first five pages. You call the office to transmit the document.

The office manager is furious! She claims that your boss has been trying to call you for over an hour and he thinks you've been just visiting on the phone with a friend. You plead innocence and ask to speak to your boss.

He growls a "hello." You explain to him why the phone was off the hook. He understands, but informs you that the report has major changes to be made in it, and your new deadline is 3:00 p.m. He says they will send you the new information in rough handwritten form over the facsimile.

Do you go ahead and transmit what you've already done, so your boss can read it as is? Or do you wait to incorporate the changes before sending the work in? If you go ahead and send in the work, turn to Section 6, page 108. If not, turn to Section 8, page 109.
****

Section 4

You insert the changes in the letter and write a note on your calendar to send the material tomorrow. Then you call your office and tell Alice Smith to get the material you need. She says "fine." You dial your husband's number and ask if he can stop by and pick up the material. He says "sure."

At 3:00 p.m. the kids walk in and tell you all about their day. You fix them a snack, and get back to work.

At 4:30 p.m. you get up and start preparing supper. By 6:30 p.m. the dishes are done and the kitchen is clean. You sit down in front of the television, fold letters, stuff and seal envelopes, and put on the stamps. By 8:30 p.m., your work day is done--you're ready for tomorrow.

****

Section 5

Feeling pretty good about finishing the Roberts report, you arrive at Mary's at 12:05 p.m. She has tuna sandwiches, chips, and soft drinks. Bridge is fun. It's good to get out of the house.

You arrive at home just 10 minutes before your three bouncing offspring come bursting through the door. You fix them all a snack. The oldest says "You've got to take me to ball practice in 15 minutes." The middle child says "I'm going to play rehearsal, Mom, pick me up in an hour and a half." The youngest says "You promised to take me shopping for my new tennis shoes today!" and throws a tantrum. Do you try to get the kids to find other means of transportation? If you are the chauffeur all afternoon, turn to Section 16, page 113. If you make the kids responsible for their own transportation, turn to Section 13, page 112.

****

Section 6

After you send in the completed work, you wait for the changes to be called in. The phone rings. It's Mr. Dobbs saying that he's satisfied with the report the way it stands. He also says to go ahead and mail a finished copy to Mr. Roberts. Then he adds "Good job." He wants you to go ahead and type up the rough draft they have transmitted to you over the facsimile anyway and store it for future reference.

You set up your facsimile to receive. Nothing happens. You wait for 10 minutes. Still nothing. You call the office to make sure you understand what they were about to do. They said their machine was sending, but stopping in the middle of the page. You tell them you'll call the service representative for the company to come out and see what's wrong. The rep is out of town, but can come out tomorrow. Do you wait for service the following day to get the information, or do you take down all the changes over the phone? If you wait, turn to Section 9, page 110. If you call the office back, turn to Section 23, page 118.

****

Section 7

You arrive at home with your cassette. You sit down at the terminal, review the material, and type the letters. The last letter needs to have an enclosure. After searching your files, you find that the material you need is at the office. Do you transmit the completed letter and ask someone at the office to gather all of the information, or change the last paragraph of the letter to read "under separate cover, I am sending the material you requested?" If you transmit the letter, turn to Section 18, page 115. If you change the paragraph, turn to Section 4, page 107.

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Section 8

Realizing that it will be difficult to meet the 3:00 p.m. deadline, you resign yourself to the fact that the afternoon will be spent in front of the terminal. As the changes are sent, you begin to key them in. You finally finish the report at 2:45 p.m. You call Mr. Dobbs, tell him you are finished, and ask him for any new instructions. He tells you that he is proud of the way you jumped in and finished the report so quickly and so well. He also tells you that he is sure that no other worker who was at home could have done the job as well as you.

You sit down at your desk wearing a smile. It's amazing how Mr. Dobbs can make your day with one small comment like that. You also realize that that is his way of apologizing for the way he jumped on you earlier in the day.

Your thoughts are interrupted with the sound of your children's voices. They bound into the house from school. Your oldest child wants to know if she can use your terminal to type the term paper that she has due tomorrow. Knowing full well that it would take her three days to manually type a 10 page paper, you agree.

You go to the den and set up the machine with the margins and all that she will need for manuscript typing. You sit down to do some checking of figures that Mr. Dobbs needs to incorporate in the talk he is to give next week. Your concentration is interrupted with, "Mom, how do I center the title of the paper?" You get up and show your precious offspring how to center a title. You return to your calculator. "Mom, how do you do side headings?" Again, you stop what you're doing and explain. Again, you return to your job. "Mom, how to you spell 'community'?" You tell her to look it up. "Mom, where is the dictionary?" Trying to remain calm, you declare, "I'M SURE IT IS IN THE MIDDLE OF THE FLOOR IN YOUR ROOM WHERE YOU LEFT IT!!" "Mom, why are you yelling at me?"

If you decide that the most advantageous thing to do is to type the paper yourself, turn to Section 19, page 115. If you go outside with your calculator and paper to finish your work, turn to Section 25, page 119.
****

Section 9

You have decided that there is nothing you can do on the changes today. You call the office back and tell them the situation. Mr. Dobbs reluctantly agrees to let you wait until tomorrow to type up the rough draft. He also adds, "You need to compose a form letter to Board members about the meeting next Thursday. It needs to be in the mail tomorrow."

You immediately set out to write the letter. After it is completed, you call Mr. Dobbs back to get his input. He has gone for the day. He usually likes what you compose--so you decide to go ahead and type the letter up, merge it with the mailing list, and have it ready for the morning mail. You plan to to call him first thing in the morning to make sure all the information is correctly entered. It is now 5:30 p.m., and time to call it a day at the office.
****

Section 10

You tell the secretary on the phone that it is apparent to you that she might also like to be a home worker. You mention the fact that if she would like to try it, she needs to talk to Mr. Dobbs about it. He has been so receptive to your situation and you feel certain that he would be to her, too.

She says that what she really resents is the fact that so many times she has to stop what she is doing in order to do the "finishing up" work for you. For example, if you type a letter that needs to have three photocopies made of it, she is the one who has to do it. If there is another letter that needs to be looked up in the file, she has to do that too. She says that she even has to take letters around to be signed that you have typed. You say that you understand how she feels and that that has really bothered you, too. You tell her that you think she needs to talk to Mr. Dobbs. You suggest that the three of you sit down together next week when you come into the office. She agrees.

She starts to say something else, but stops. You wonder if she's going to lambast you again, or if she really has another problem she wants to bring up. If you decide to try to find out what she was going to say, turn to Section 35, page 122. If not, turn to Section, 31 page 121.

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Section 11

Thankful that you took your shower and dressed earlier, you pick up the report, and get in the car. You hope your husband remembered to stop for gas. As you start the car, the fuel gauge doesn't budge off "E." RATS! There's no way you can make it all the way to the office on this much gas; it is 10:45 a.m. You stop at the filling station. As you are topping off the tank, you overflow it and spill about $1.50 worth on your shoes.

You pull into the parking lot at the office at 11:20 a.m. reeking of low lead perfume. The only place you can find to park is the farthest one from the door. Aggravated, you pull in and walk, report in hand, to the office.

Mr. Dobbs is surprised to see you, but is delighted to have the finished report. He tells you he has a couple of letters that need to go out right away and hands you a cassette. Do you stay at the office and type them, or take the cassette home?

If you stay, turn to Section 21, page 116. If you go, turn to Section 7, page 109.

****

Section 12

Mary is disappointed, but asks you to come over for lunch. After checking the work load for the day, you accept, telling her that you can stay only for one hour. Mary says, "Don't you have some work you could do tonight? If so, do that and we'll get two more and play bridge from noon until the kids get home at 3:00 p.m."

There is a form letter that needs to be keyed in, merged with a mailing list, printed, folded, and stuffed. The envelopes need to be printed out as well.

If you decide to play bridge, turn to Section 5, page 108. If you decide to beg off this time, turn to Section 15, page 113.

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Section 13

The kids grumble about how unfair you are, and how tired they are, and how they've had such a busy day, and you've been home all day, and . . . .

You remind the kids that even though you are home, you still have a full-time job. It is necessary to keep things in the proper perspective. You also remind your oldest child that your next door neighbor is also going to ball practice and to call them and work out a car pool—you'll be glad to pick up after practice. You tell the middle child that you'll be at rehearsal to pick her up on the way to pick up the ball players—and to be ready at exactly 4:30 p.m.

Your youngest child looks up at you hopefully. "Sorry, Sweetie, but we'll just have to go buy your shoes on Saturday—if you can wait until then, I'll also buy you the Michael Jackson record you've been wanting."

With those problems worked out, you start keying in the letter. By 4:15 p.m. you have the envelopes printed and the letter edited. You can print out the letter when you get back and stuff the envelopes while watching TV tonight. "A full day's work for a full day's wage," bridge, and family obligations met. What a genius you are.

The phone rings; Mr. Dobbs needs to get some work to you by tonight so you can have it completed by tomorrow morning at 10:00 a.m. If you decide to route your husband to the office to bring home the work, turn to Section 33, page 122. If you decide to drive in the morning, turn to Section 30, page 121.

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Section 14

You try to recompose yourself. You tell Jason that he'd better sit down on the sofa and not move, or you are going to tell Santa and the Easter Bunny AND the Tooth Fairy, and that you are considering telling Big Bird, who will run away from Sesame Street. He tells you that you are mean. You smile, and start keying in the material again.

By 12:15 p.m., you have finished. You call the office and tell them that you are about to transmit. They say, if there are no questions or changes that you have, then go ahead and print it out and drop it in the mail. You print out the report, address the envelope, and mail it to Mr. Roberts. You call the office again to see if a copy needs to be kept at the office; they assure you that there is no need for that.

Mary Johnson comes to pick up Jason at about 1:00 p.m. You wonder what kind of dentist would take four hours to do a general cleaning and check-up. Then she tells you that she wants you to come over to her house and look at the new outfit she just bought! You tell her that you don't have time because you still have plenty of work to do and you have to make up the hour you spent at her house this morning. She really doesn't understand, but says "OK." As Jason leaves, he turns around and sticks his tongue out at you. Thank goodness he's Mary's kid!!

The phone rings. It's Phil Davidson, another homeworker you met quite by accident at the word processing training sessions your vendor supplied. You've become good friends, and it helps to have someone who shares the same problems you have. He says that his employer is discontinuing the home work program. You ask "Why?" He says, "If I tell you, it could be expensive to you; if I don't, you can plead ignorance." If you want to know, turn to Section, 32 page 121. If not, turn to Section 26, page 119.
****

Section 15

Obviously, Mary is angry. She doesn't understand. The most exhausting thing Mary does during her whole day is pack the kids' lunches. She'll get over it. You apologize, and ask her and her family over for dinner Saturday night. She accepts--all is forgiven.

As you return to the report, you discover the kids have been playing with the machine and have erased the five pages of the report you've already done. Luckily, you printed out copies of the completed pages. You read over them again and find they contain no errors. As a matter of fact, they look pretty good. You finish keying in, proofing, and editing the report. It is 10:30 a.m.

Should you go back and key in the remainder of the report, so you can transmit it, or get a hard copy and drive the final copy of the report in to the office?

If you decide to re-key the first five pages, turn to Section 3, page 107. If you decide to drive the completed printed copy the 20 miles to the office, turn to Section, 11 page 111.
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Section 16

You have only worked for four hours today thus far. That means an additional four hours tonight after supper. The kids have a right to their activities, too. After all, weren't the kids the primary reason for working at home? A full hour and a half of driving the kids all over town. . . . All of these thoughts are running through your head as you pack the kids and their paraphernalia into the car. Then you think of that television program you wanted to watch tonight. It starts at 8:00 p.m. If you start supper as soon as you get home, get the kids to set the table, eat by 5:30 p.m., have the kids clear the table and wash the dishes, you can be at the terminal by 6:00 p.m. It will take about two hours to key in the letter, merge it with the mailing list, and print out the 75 copies. Great!!

You think about how the kids expect you to do so much for them. Then you think, "Why can't the kids help me?" If you decide to let them help, turn to Section 27, page 120. If not, turn to Section 34, page 122.
****

Section 17

At 8:15 a.m. you call the office and tell them you'll be in at 9:00 a.m. All's well there. It's so good to talk to Alice Smith, your old colleague. You feel a tinge of nostalgia. You really miss the good times at coffee and at lunch with your office buddies. You ask Alice to have lunch with you next week when you come into the office for your bimonthly visit.

You hang up, get your keys, and walk over to Mary's. The trip sounds wonderful. You're really glad Mary and Jim got to go.

Just as you are about to leave so Mary can make it to her dentist appointment, the telephone rings. It's the school. Mary's child at kindergarten has come down with a fever, and needs to come home.

Mary looks really disgusted and says, "Well, looks like I'll have to wait another six weeks for my dental appointment." You think of the report that's due in three hours.

Do you offer to keep the sick child so Mary can make it to the dentist?

If you do, turn to Section 2, page 106. If you say, "Sorry, Mary, but I've a report that has to be done by noon," turn to Section 20, page 115.
****

Section 18

You call the office and ask to speak to Alice Smith (your buddy). She is not able to come to the phone right now. So, you ask Hazel Simmons to set up her machine for transmission. You hate doing that because Hazel is such a complainer. She starts fussing about how much work she has to do and that she doesn't have time to do yours too.

Calmly, you explain the situation to Hazel. She says that you shouldn't have gone home to work in the first place. Instead of getting into a philosophical argument with Hazel, you tell her that (1) if she'll accept the transmission for you, (2) get all the letters signed, (3) assemble the enclosures, and (4) mail them, you'll gladly type the budget report for her when you're in the office next week. Hazel hates to type the budget report, so she gladly accepts.

Even when you work at home, sometimes it is necessary to trade off jobs to help other workers who are in a crunch.

****

Section 19

You finish your calculations, put your supplies away, and head for the kitchen to start supper. Every 30 to 90 seconds your daughter yells, "Mom, how do you ________?" You have decided to let her struggle with the paper until supper. Next time she'll learn not to wait until the day before the paper is due to type it.

At dinner you ask, "How much of your paper did you get typed?" "Oh," she says, "about a page and a half." "That means a page an hour--burning up the keys, are you?" you reply. Then, you promise to finish typing it if all the words are spelled correctly and all of the grammar is correct. "Thanks, Mom, you've saved the day again."

Of course, you have--you are just thankful that you have the word processing capabilities instead of an old electric or manual typewriter waiting in the den.

****

Section 20

Feeling somewhat guilty, you enter your home, sit down at your machine, and begin keying in the information. At 10:45 a.m., you are ready to print out the final copy.

The doorbell rings; you answer it. It's a service man from the electric company telling you that the electricity is going to be turned off in 15 minutes. He also informs you that it will be off for two to three hours. Panicked, you immediately run to the phone and call the office to transmit the report. You just finish sending the report in as the electricity goes off. Relieved, you call the office again.

The secretary who doesn't like the idea of your being home while she's still at the office answers. You explain that your electricity is off. She says, "Sure." You tell her that you'll not be available for electronic mail for the next two to three hours. She says, "Sure." You tell her that you're going to stuff envelopes, order supplies, prepare a handwritten rough draft of the semiannual report, and set up Mr. Dobbs' meeting with the budget committee next week. She says, "Sure, got a couple of loads of clothes to do and a cake to bake, huh?" If you let her have it, turn to Section 24, page 118. If you don't, turn to Section 10, page 110.

****

Section 21

As you sit down at your old desk, you have a strange feeling--of belonging, yet not quite belonging. The place is familiar, the faces are familiar, the machine is familiar, so why do you feel so foreign? Oh, well, you were told to expect this. You feel as though you are no longer in the hub of things. Then you remember the flexibility of working at home and its benefits.

Enough time for reflection. You have to get this cassette typed up and get home and unlock the door before the kids arrive. As you begin transcribing the cassette, Mr. Dobbs stops by your desk asking, "Where are the budget figures?" You stop, go through the files and take the information to him. He tells you about travel plans that need to be made for two weeks from now when he has to go to Miami for the national conference. You make notes on that, to take home and make the arrangements. He wants to chat for a few minutes longer.

By the time you get back to your desk it is 2:30 p.m. You call Mary and ask her to tell the kids that you're at the office. They are to let themselves in, fix their own snacks, and get started on their home work.

At 4:30 p.m. you have finished the cassette and have everything ready to be proofread and signed by Mr. Dobbs. He is on the phone. You decide to leave the completed work on his desk. You ask Alice to please fold the letters and do any finishing up work that needs to be done on them. She says sure, and then asks you to stop by Smokey's with her after work.

You'd love to, but you really need to go to the PTA meeting tonight, and you have to get supper and all. Next time, for sure.

You tell everyone at the office "bye," get into your car, and head for home. It's now 4:55 p.m. "Sometimes working at home is the same as working at the office" you think as you ease out into bumper to bumper traffic.

****

Section 22

You call the office and get Mr. Dobbs on the line. You explain to him that the report will be late. "How late?" he wants to know. Then you tell him what has happened. He says, "Are you trying to run a day care center, too?" You tell him absolutely not, but this was a special case. He says that he has a luncheon appointment that should be over by 1:00 p.m. and wants to know if you can possibly have the report done by then. You assure him that it will be.

You inform Jason that if he values his life, he will not touch anything in the house. He is to lie down on the sofa and watch TV. He says he is hungry. You tell him that his mother will be back soon and she will feed him. He wants to know if he can watch you. You tell him yes, if he can be quiet. Surprisingly, he is fascinated with the machine and with your typing ability. He sits quitely mesmerized. At 12:30 p.m. you finish the report and transmit it to the office.

At 1:10 p.m. Mr. Dobbs calls you to tell you the report looks fine. He wants you to print it out at your home and put it in the 2:00 p.m. mail. Jason is still insisting that he is hungry and that he is tired of watching you. You fix him a peanut butter and jelly sandwich and a glass of milk. You sit down to print out the report. Just as you are printing out the last page, the doorbell rings. It is Mary, at last, to pick up Jason. You enter the den to get him, just in time to see him pick up the report. As you take it away from him, you notice a peanut butter fingerprint on 6 of the 10 pages. That means printing those pages over again. You pack Jason up, tell Mary that you will call her later, and return to your printer.

By the time you get the report printed the last time, it is too late for the 2:00 p.m. mail. So you address the envelope, enclose the report, and take the report to the post office yourself.

When you return, Bruce McDaniel is at your door to borrow a cup of sugar. Bruce's mother, Lisa, is confined to a wheelchair. She's a single parent and is really in financial trouble, but her illness prohibits her from working full-time. Bruce tells you they may be moving to a place that's not so expensive to maintain. You give him the sugar, show him to the door, and tell him goodbye. As you close the door, you get an idea. Why couldn't Lisa work at home as you are? If you decide to look into this for Lisa, turn to Section 36, page 123. If not, turn to Section 28, page 120.

****

Section 23

Mr. Dobbs is angry. If you were at the office, this would not be a problem. You apologize and ask him if he wants your husband to stop in on his way home and pick it up. He says, "That's a good idea. I really need this to be done by first thing in the morning." You realize that means having to work late, again. At least that does mean that you don't have to worry about whether or not the kids are all right. It also means that you will not have to make a trip back into the office as some of the secretaries must when they have a deadline to meet.

Knowing that the work has to be done tonight, you decide to take the rest of the afternoon off, so that you will be fresh and ready to do your best work tonight after supper--no matter how long it takes to finish the job.

****

Section 24

As you try to maintain your cool, you tell the secretary on the other end of the line that neither your job title nor your responsibilities have changed. You also tell her that you remember the last time you were in the office, she didn't start to work until an hour after she got there. You also remind her that she spent 45 minutes waiting for someone to finish with the photocopying machine so she could make some copies. Then you ask her to do an experiment. You tell her to write down all the time she is at the office that she is waiting for work or waiting for someone else to do something so that she can do some work. She says, "Fine, we'll see who does the most work around here."

Since she said that, you've decided that you have to generate more work that day than you have in two months. You immediately start typing the policies manual (a job you've been dreading) that you've had on your desk for three weeks but haven't had the time or the inclination to get to it.

At 4:45 p.m. you have keyed in and edited 20 pages. You transmit it to the office. Mr. Dobbs says that he is glad to have someone as efficient as you are at home. He also says that the other secretary in the office has done more work that afternoon than any other day in history. He is quite pleased; and in fact, so are you.

Mr. Dobbs calls you. He said that a problem has arisen that he needs to discuss with you. It seems that a secretary in the personnel division wanted to work at home. But there are a couple of concerns. He wants to know how you really feel about working at home. If you recommend it, turn to Section 37, page 123. If not, turn to Section 29, page 120.

* * *

Section 25

You pack up all of your equipment and supplies and head for the great outdoors knowing that you will be interrupted at least two dozen times between now and when your work day is over. Relentlessly you continue to calculate and record the figures Mr. Dobbs wants. At 5:15 p.m., you are finally through. You pack up your work, return it to your "office," and begin to prepare supper.

Even though your work day is over, you know from experience that for two to three hours this evening you will be sitting in front of the terminal helping your daughter finish her term paper. Oh well, at least you have the equipment you need to make the job as easy as possible.

* * *

Section 26

Although the thought of not knowing may eat at you for days, you decide it's probably better to be ignorant, because you can't afford any added expense at this time. So you're sure you made the right decision not to find out.

You spend the rest of the afternoon making arrangements for the conference Mr. Dobbs is conducting next month. It is necessary to find a facility that has a conference room that can hold 100 people. The menu must also be planned and ordered. Then, a master list of individuals who might want to attend needs to be developed.

By 5:00 p.m. you are almost half way through with the list. You decide that the rest of the list can be finished tomorrow. You put away your supplies, head to the kitchen, and fix supper.

* * *

Section 27

You bring up the possibility to the kids. Your oldest says "Aw, Mom"; your youngest says, "I'll probably mess up"; the middle child says, "Hey, great, we can play office."

The kids run off making plans about how to arrange the office, who will be the boss, and the other particulars of the "game."

It takes them about two hours to finish up the work for you, and they really had a good time helping.

****

Section 28

Lisa is such a fine person who has really had her share of bad luck. Lisa would not take a handout. You think about the many comments your co-workers have made about how little work you do and how much you get paid; if the people at the office made some of these remarks to Lisa that they've made to you, she'd be devastated.

So you decide to casually mention the idea to Mr. Dobbs, see how he feels about it, and then try to talk to Lisa if you can work out the details.

Oh well, enough of that for now. You sit down to stuff the envelopes for that mass mailing. It's funny how they send you all the general flunky stuff to do. It's almost as if they think you lost your reasoning ability as soon as you moved home. You decide they're going to keep you busy if it kills them. It's not worth complaining about. At least you have a job and your health.

****

Section 29

You tell Mr. Dobbs that you love working at home, but it is definitely not for everyone. You tell him that sometimes you miss the people in the office so much. It's really like being a part of a family from which you have to be isolated; you belong, but you don't. You tell Mr. Dobbs that he needs to think about security. If that secretary is going to be working with personnel files, then that information might be available to anyone who comes into the home work station. Aren't personnel files confidential?

Mr. Dobbs says, "Thanks. I had not thought of that. I guess you're right, not only do personalities have to be considered, but also the job responsibilities. I knew I valued your opinion."

****

Section 30

When your husband left this morning, he said, "I feel I spend more time in your office than my own. I know all your office gossip--what's going on with the contracts, and who's having a baby. Why can't they figure out some other means of getting the work to you?"

Obviously, he's getting tired of stopping in at the office all the time because they usually don't have all the information together so that he ends up waiting 30 minutes. A trip to the office tomorrow morning will waste about two and a half hours of your time, but it's worth it to have a happy husband.

****

Section 31

You tell your co-worker that you are sorry she has problems with the fact that you are home working. Since this particular secretary is well known for opening up a can of worms, you've decided that a secretary's jealousy is not worth the hassle.

You return to your work on the supplies order.

****

Section 32

Phil says, "I just found out we are in violation of the zoning laws for this area. We have to go down and make application for a permit. It costs $200 whether we are awarded the permit or not."

"What happens if we just don't file?" you ask. "If they find out, they can fine us and make us close down our home offices." Phil goes on to say, "I'd almost decided to go back to the office anyway. I feel I've been looked over twice for a promotion. There's another position opening up in about three months, and I feel it's absolutely necessary that I get the exposure that being at the desk in front of the boss every day affords."

You hang up feeling a little depressed. You decide that you'd better go down to the zoning commission the next day and apply for the permit, even though it means taking money out of savings.

****

Section 33

Your husband is delighted to stop by the office for you. He's told you so several times. So, you call him and ask him to. He grumbles something about how bad the traffic is at that time of day and hangs up.

Now, is he going to stop by on his way home, or not? Who knows. If he doesn't, you'll have to go in tommorrow. When he gets out of the car, sure enough, he has the papers you need. What a great guy. He may not know it, but he's already started tomorrow off very well for you. Better let him know it, with a smile of appreciation.

****

Section 34

Remembering the child labor laws, and the possibility of starting a trend of expecting (consciously or unconsciously) the kids to work, you decide what to do. During the show, you can fold the letters and stuff the envelopes. You'll get in your eight hours, run the kids to their functions, and get to watch your program. It's great that working at home allows you such flexibility too!

****

Section 35

You say "If you have any other problems, please tell me." She says, "The thing that bothers me the most is the dictation. You always did that when you were in the office. The equipment we have works so poorly that now I have to do all the dictation. When Mrs. Anders dictated all those letters on her portable dictating unit I tried to transmit them to you. I erased about 15 minutes of it. She told me I should apply for a job with Richard Nixon. I was really embarrassed. I wish they would invest in the tank-loop dictating unit. It's just so expensive; Mrs. Anders said it costs about $15,000. I know this seems petty, but I just can't help it!"

You fully understand her feelings. That dictating equipment has been a problem from the beginning. If only the cassettes would fit, but Mrs. Anders' casettes won't work in your machine.

Although the problem is not solved, it has at least been stated so it can be dealt with.
****

Section 36

You immediately call vocational rehabilitation and find that they will pay for Lisa's training, but they are unfamiliar with the home work concept. You explain to them how your job works; they are quite interested in the whole idea and want to send over a representative to look at your work station.

You go over to Lisa's and tell her what you've done. She's hesitant because you've told her often of some of the difficulties you've had. You finally convince her to give it a try.

It's 5:30 p.m. now, and you still have work to do. After supper Mary calls. She says, "I want to thank you so much for keeping Jason for me today; I'm coming over to help you stuff envelopes for the mass mailing you told me about." You and Mary sit at the kitchen table for two hours and stuff envelopes. It was really fun. You got four hours of work done in two, and had a good time doing it. Working at home is great.
****

Section 37

"Although working at home has its problems, it also turns out to be my salvation. As you know, I couldn't work without it. But, I would make a suggestion. Have the department do a job analysis first. A friend of mine worked at home three days a week, but there wasn't enough work suited for transmission for her to do. Her boss then asked her to come in to the office an extra day, so she was home only for two days. Then, they found they needed her to come in four days a week. It was hardly worth it to her to stay at home for one day a week. She was really resentful.

But, in our case, it works great because of all the word processing I have to do. So, again, my advice would be to do a job analysis to see if the job is suitable. As for my personal feelings, I love it, Mr. Dobbs, and I'll always be grateful to you for giving me this opportunity."
****

This simulation emphasizes some critical incidents that occur in the home work setting. As you consider home work in the future, you may want to give special attention and thought to the following home work issues:

- Changes in communication patterns with family, workers, and managers
- Child labor concerns
- Child care concerns
- Conflict of home life and work life
- Co-worker perceptions
- Distance factor when under a deadline
- Equipment costs and maintenance
- Laws and regulations
- Security
- Social isolation
- Types of work conducive to the home setting

VI. NEW LANGUAGE FOR THE OFFICE

These terms were adapted from The Illustrated Computer Dictionary, The Webster's New World Dictionary of Computer Terms, and Word/Information Processing Concepts.

TERM	DEFINITION
Alphanumeric Keyboards.	A keyboard with letters, punctuation marks, numbers, and special characters such as mathematical symbols and Greek letters.
BIT	The acronym for Binary digit, always a zero or 1, and the smallest piece of information the CPU can process and/or store.
Boot.	The first process clearing memory of the computer and the loading of first instructions; the "starting up" process.
Byte.	A consecutive group of bits in sequence to represent one character (8 bits or 1 byte for each letter, number, or character) or portion of a word.
Commands.	Statements in coded format that tell the computer or word processor what to do with data.
Compatability.	The ability of software to be run on different manufacturer brands of computers without modification (drive-to-drive compatability).
CRT	Cathode Ray Tube (also called VDT--Video Display Terminal). This piece of hardware is like a television screen, and is used to view input information.
Cursor.	A flashing square, line, or pointer to indicate the position on the screen.
Daisy Wheel Printer.	A letter quality printer with a wheel-shaped print element with radial spokes; each spoke has a raised character on the end. As the wheel turns, the spokes are impacted by a tiny hammer, and the characters print onto paper. This type of printer offers better print quality than most dot matrix printers but is more expensive.

Data.	Information to be input (entered) into a system, processed (mathematically and/or logically) and then output (typed-out) in an understandable form.
Data Base Management.	Software that allows the user to add, delete, retrieve, and update information records in computer storage.
Disk (hard).	A memory storing device usually made of rigid ceramic or aluminum and magnetized by coating with a magnetic substance. More expensive than a "floppy" disk, it offers faster access time, has a higher capacity for memory (3 to 20 million bytes), and is more reliable.
Disk (soft or floppy).	A flat piece of flexible mylar plastic, ranging in diameter from 3" to 8", coated with a magnetized substance to allow temporary storage of bits.
Disk Drive.	The device (built-in or separate) that allows storage of information via rotation of magnetic disks.
Documentation.	Written instructions, procedures and manuals/guides that accompany software and hardware to explain use and maintenance.
DOS	The acronym for Disk Operating System. A system which tells the computer how to operate specific tasks and how to store the information on disks, not in the main memory.
Dot Matrix.	A type style whereby letters and numbers are formed using a series of dots instead of a continuous line. Output from a dot matrix printer is generally not letter quality, and typically is used only for internal documents.
Dot Matrix Printer.	A printer with bundles of tiny protruding wires or needles that combine to form dotted patterns of individual characters that impact onto paper. Dot matrix printers are of poorer image quality than letter quality printers but type faster and are less expensive.
Edit.	To make changes in text or a program. Editing changes can be additions, deletions, or alterations of data.
Ergonomics.	The study of the relationship between machine usage, efficiency, and the comfort of the person involved in work. Also called "human factors."

Facsimile.	A machine (also called a FAX) that can transmit photocopies of original handwritten, type written, or printed documents over telephone lines to a remote site.
Hard Copy.	Output of information in permanent form, usually on paper, as opposed to temporary video display of information on a CRT screen.
Hardware.	Machinery, circuitry, or other physical components from which the computer is built. Everything not software is hardware.
Ink Jet Printer.	A type of printer where dot matrix characters are formed by ink droplets electrostatically printed on the paper surface. Advantages are high resolution, quiet operation, and color reproduction capability.
Input/output Devices.	Devices which allow an operator to put information into, or get information out of, a computer or word processor via a keyboard.
Interface.	Hardware and software necessary to connect two systems or two parts of equipment to each other (between terminal and central processing equipment).
K.	Kilobytes (1024) bytes—a standard measurement term designating amounts of main memory of a computer (double-spaced, typewritten documents equal approximately 2K per page).
Keyboard.	A typewriter-like device that allows the user to type in information to a computer or word processor.
Laser Printers.	A printer that focuses laser beams to form images on photosensitive drums similar to that used in office copiers. Laser printers, used as output devices for computers, are high speed, high resolution, and relatively expensive compared to other printers.
Letter Quality.	Daisy wheel, ink jet, laser, printer types that produce documents of typewriter quality and therefore could be mailed externally.
Liquid Crystal Display.	A technology used in calculators, computers, and wrist watches because of its thin profile. It has high visibility in bright light levels; no visibility in low light levels.

Megabyte.	1000K.
Membrane keyboard.	A type of keyboard composed of a single flat sheet of semiflexible plastic material with a conductive rear surface that when flexed (approximately 0.005 inch) via slight finger contact, the signal is transmitted. Its touch sensitive controls are similar to those on copy machines or microwave ovens.
Merge.	Combination of records or data from two files to another, separate file. An example would be combining a mailing list and the text of a form letter for a mass mailing.
Microprocessor.	The Central Processing Unit (CPU) of a microcomputer.
Modem.	Acronym for Modulator-Demodulator, a device that allows information to be transmitted back and forth over telephone lines.
Monitor.	The video screen of a CRT, especially one used with a microcomputer.
Nonimpact Printer.	A type of printer that forms dot matrix characters or fully formed characters, one at a time, via electronic, chemical, or heat signals transferred onto paper. (See ink-jet printer and laser printer.)
Operating Systems.	This system controls all other software functions and runs the system. Operating systems tasks are input and output of data, storage of information, and report of systems status, and so forth. Operating systems are usually part of the machine package purchase. Different machines use different systems. For example, IBM uses MSDOS (acronym for Microsoft Disk Operating System). The most common operating system is known as CP/M (acronym for Control Program for Microprocessors). There are many other operating systems on the market. When selecting a computer or word processor, it is important to know the type of operating system the machine uses and the availability of compatible software.
Peripherals.	Equipment used for input/output, operated and controlled by the CPU, and connected to the main unit. Peripherals include disk drives, printers, modems, and so forth.

Printer.	An output device for producing hard printed copy. (See dot matrix printer, letter quality printer.)
Programming.	Devising and entering data-processing instructions into logical sequence that the computer or word processor can understand and follow as well as checking the instructions for accuracy, making corrections, and documenting the program.
Programs.	Sets of sequential instructions telling computers how to process information or perform calculations. Also called software.
Proofing.	Reading typed material for typographical errors, grammatical errors, or format errors.
RAM	The acronym for Random Access Memory, the amount of memory in the machine that is user programmable. The RAM is not retained when the machine is turned off.
ROM	The acronym for Read Only Memory, the amount of memory programmed by the computer manufacturer and that is not user programmable (cannot be changed by the user).
Spreadsheeting.	Also can be called "electronic spread sheeting." A worksheet, either scientific or business, that allows the user to state a relationship between sets of terms. If the data are changed, then the program will recalculate any related terms and store the information in memory. (Such programs usually contain the term "Calc" in their names.)
Sort.	A technique whereby records or files are put in a logical order, either alphabetical, geographical, numerical, or chronological.
Standalone.	A device, program, or system that operates independently.
Video Display.	Any peripheral device that displays data on a screen, such as a CRT.

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